

3DArtist™

19

Practical inspiration for the 3D community

Model tutorial

Sculpt in modo

Model a games warrior using modo and ZBrush

\$440
of models
on the
disc!

In the Workshop

- Design outfits in DAZ 3D
- The secret to stainless steel
- Make realistic jets of water
- Apply fur to your creatures
- Create forests with proxies

In-depth feature

Stereo 3D

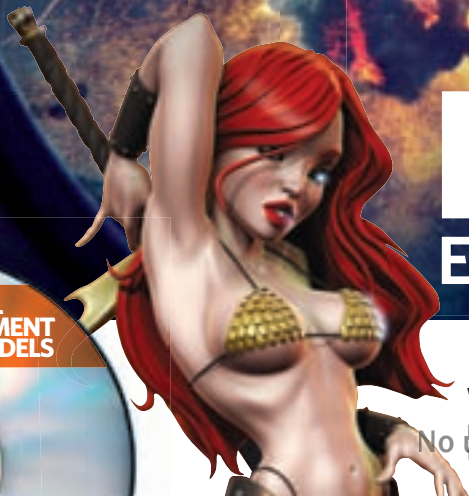
All you need to get to grips with stereoscopic 3D technology



DAZ 3D models
Native American models
Female model
Various polycounts & textures

ON YOUR
FREE CD

4 ESSENTIAL
ENVIRONMENT
SCENE MODELS

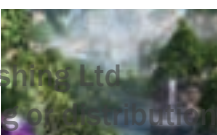


CREATE NEW WORLDS

Expert advice for modelling environments

Figure art with Silo

Build up a character using this affordable software



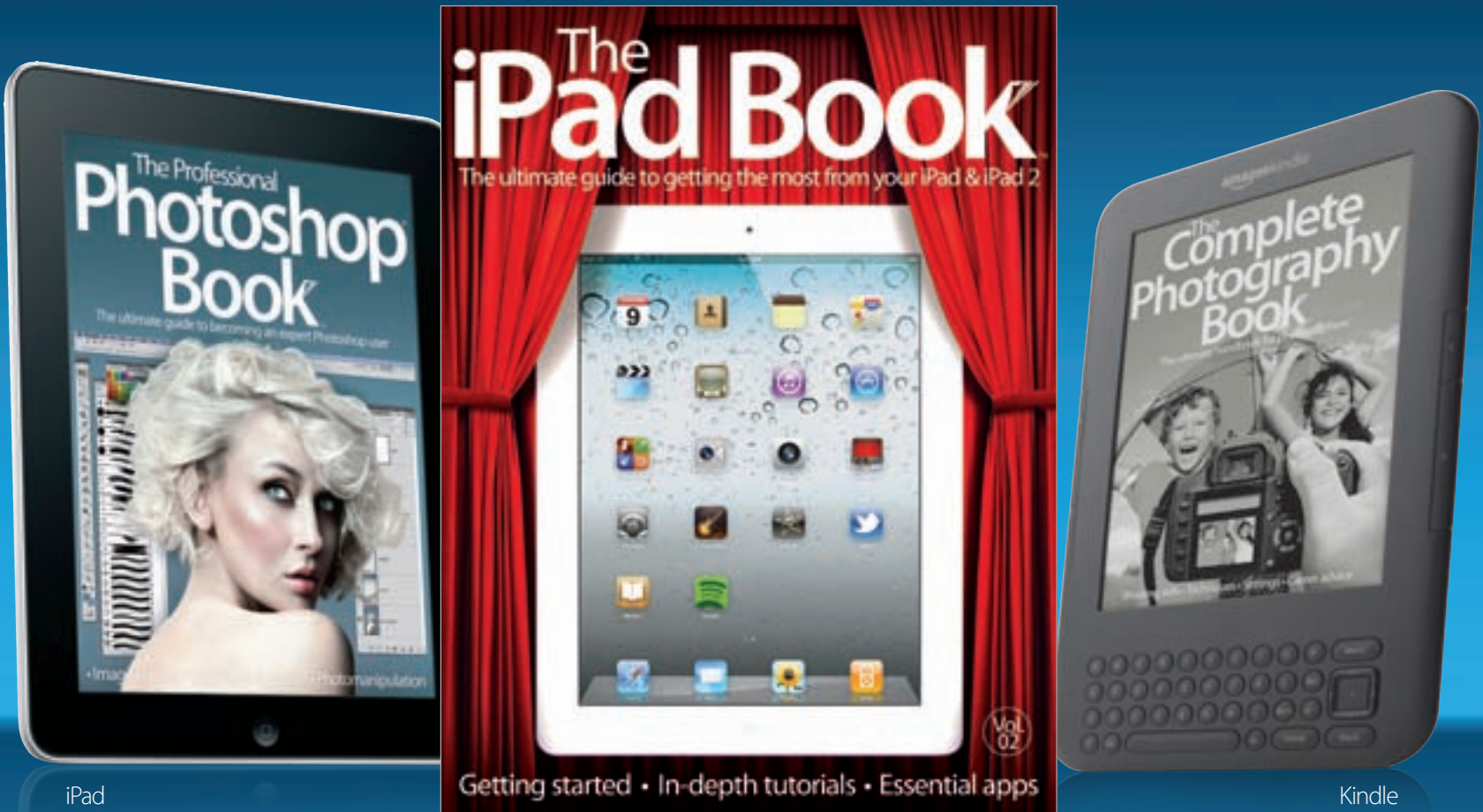
Landscape masterclass

Tips and tricks to compose your own concept landscape

How to make lenticular 3D

Expand your skills and create lenticular images at home

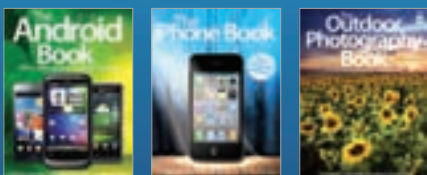
Learn in style



The BookTM Series

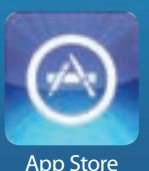
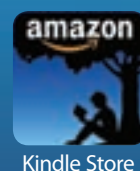
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Artist info



Dragos Jieanu

Personal portfolio site
www.jieanu.com

Country Romania

Software used
3ds Max, Photoshop

Cover artist



Battlefield is the amazing image gracing our cover this issue, courtesy of Dragos Jieanu. This talented artist combines 3D models with Photoshop to produce spectacular images that hover somewhere between a painted image and a 3D render. To see more of Dragos' work, make sure you visit his website.



Welcome

to the magazine and 116 pages of amazing 3D

3DArtist

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Bournemouth, Dorset BH2 6EZ
☎ +44 (0) 1202 586200
Web: www.imagine-publishing.co.uk

Every issue you can count on...

- 1 **116 pages of creative inspiration**
- 2 Behind-the-scenes guides to images and fantastic artwork
- 3 **A CD packed full of creative goodness**
- 4 Interviews with inspirational artists
- 5 **Tips for studying 3D or getting work in the industry**
- 6 The chance to see your art in the mag!



The best aspect of any artform is being able to step outside of reality and construct something in your own vision. One of the most obvious ways

this can be done is by moulding new worlds and our feature on page 28 has a look at the software and the artists that dedicate themselves to new environment visions.

Elsewhere in the issue, we take a look at stereoscopic 3D workflow, have the first part of a modo and ZBrush modelling workshop, delve into the world of lenticular 3D and also swing by Double Negative to find out about its involvement in the latest Disney blockbuster.

*Jo Cole,
Editor in Chief*

This issue's team of expert artists...



Duncan Evans



Gone but not forgotten... Duncan returns to examine landscape generation software and gets involved in sorcery



Antony Ward



Discover how this artist took an existing piece of 2D art and transformed it with a generous dash of 3D, minxy mastery



Andrea Horvath



Andrea talks us through the process she used to construct her own Vue fantasy jungle based on *Avatar's* Pandora



John Hayes



In the first of a two-part tutorial, John uses modo to construct a fantasy warrior before buffing him up in ZBrush



Christian Hecker



If you'd like to dip your toes in the Photoshop pool, this great tutorial from *Advanced Photoshop* magazine is perfect



Christian Darkin



Christian delves into the world of lenticular 3D, explaining the ins and outs of this increasingly important artform



Lance Hitchings



Realistic metal textures are vital for anyone who renders vehicles. Here Lance reveals how to achieve them in Maya



Paul Francis



If you have ever desired furry pants, Paul reveals how Poser's Hair Room can be a source of follicle creativity



Ryan Knope



Ryan shows how to quickly populate a scene with the help of mr Proxies in 3ds Max. It's a great way of saving time



Daniel Lovas



CINEMA 4D man, Daniel, returns to share his skills. This issue he tackles how to create realistic jets of water



Dominic Davison



Keeping with the water theme, Vue pro Dom reveals his tricks for constructing lifelike ponds in scenes



Rob Redman



Think there's no such thing as a free lunch? Well there is if you feast on ZBrush - Rob tests Pixologic's free video tutorial area

Sign up, share your art and chat to other artists at
www.3dartistonline.com

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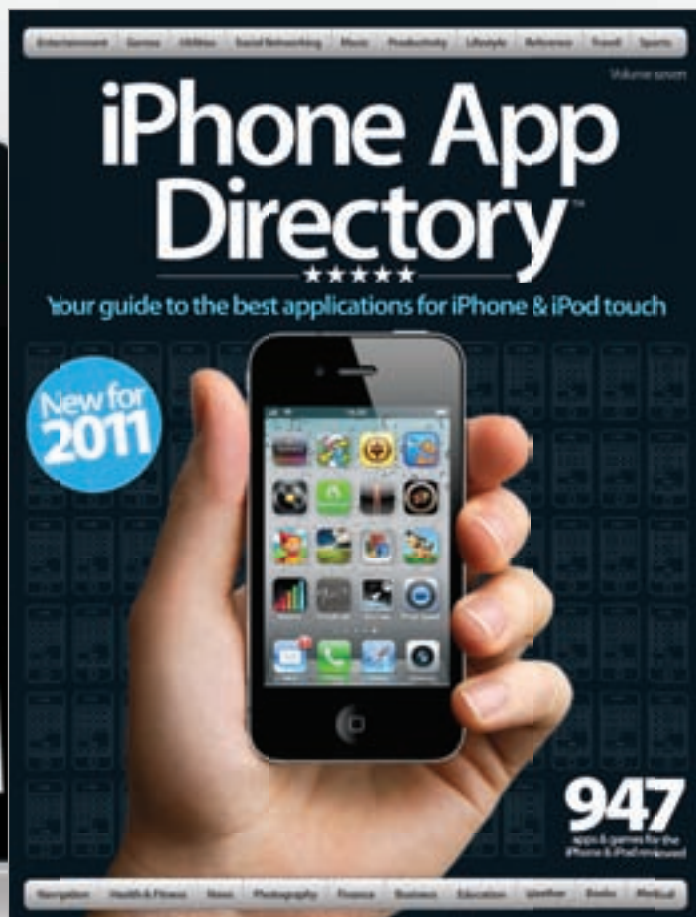
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It's a jungle out there. Swing through it



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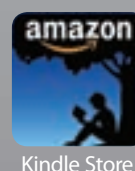
★★★★★

The definitive review listings for iPad, iPhone and Android apps

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Conte

Discover how these images w

48

Figure work in Silo

“Red Sonja sought to take an existing 2D character concept and re-create her in 3D using Silo”

Inspirational 'making of' tutorial

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“The lush fantasy world of Avatar’s Pandora has inspired me to create my own fantasy jungle... from honing the water settings to the final post-work of enhancing the jungle mist effect”

Drea Horvath, on making a concept landscape. **Page 52**

The workshop

74 Masterclass: Lenticular 3D

The stuff you need to know to produce your own lenticular art

80 Questions & Answers

This section is for users with some experience of 3D who want to learn more

Maya: Metal effects

Poser: Fur in the Hair Room

3ds Max: mr Proxies

CINEMA 4D: Jet of water

Vue: Realistic ponds

88 Back to basics: Create outfits

A fundamental look at how to manipulate fabric when using Poser and DAZ 3D models



80

Free models: Native American village

Clothes and village building models to use in DAZ 3D, worth \$54

Plus models and resources
worth over \$380

Turn to page 112 for the complete disc contents

On the Disc

Savage warrior
Source files Turn to
page 58 for full tutorial



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The studio

Professional 3D advice, techniques and tutorials

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See how one artist took a 2D concept and made it 3D



52 Step by step: Make a lush, Avatar-style landscape

Set your imagination free and get back to nature in Vue



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A beautiful snowy vista from this talented 3D artist



58 Behind the scenes: Model a savage warrior

Merge modo and ZBrush to bring this 'ripped' fighter to life



66 I made this: Nikita Veprikov, Insomnia

A tranquil peek at what happens when everyone else is asleep



68 Step by step: Use 2D and 3D

Photoshop is a useful program to add to your skill-set - here we show how it can be used in landscapes



Continued overleaf
There's even more inside...

Turn the page to discover the interviews, reviews, industry advice and more that we've packed into this issue...

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We invite the freshest and most inspiring artists to share their work

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The new features seem to target more advanced users, but how far can you go with Poser Pro?

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110 Subscribe today!

You don't want to miss an issue and it will save you lots of cash

112 On the CD

Discover the range of free goodies on the CD in this issue



“Technology is coming up trumps to improve workflow in an industry where stereo is set only to grow”

Lynette Clee, Double Trouble feature. Page 40

workspace^{3D}

Inside guide to industry news, studios, expert opinion & education



102 Industry news

Get the latest developments, announcements and releases from the 3D industry

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This modeller and digital sculptor reveals her journey from student to character modeller at Ubisoft

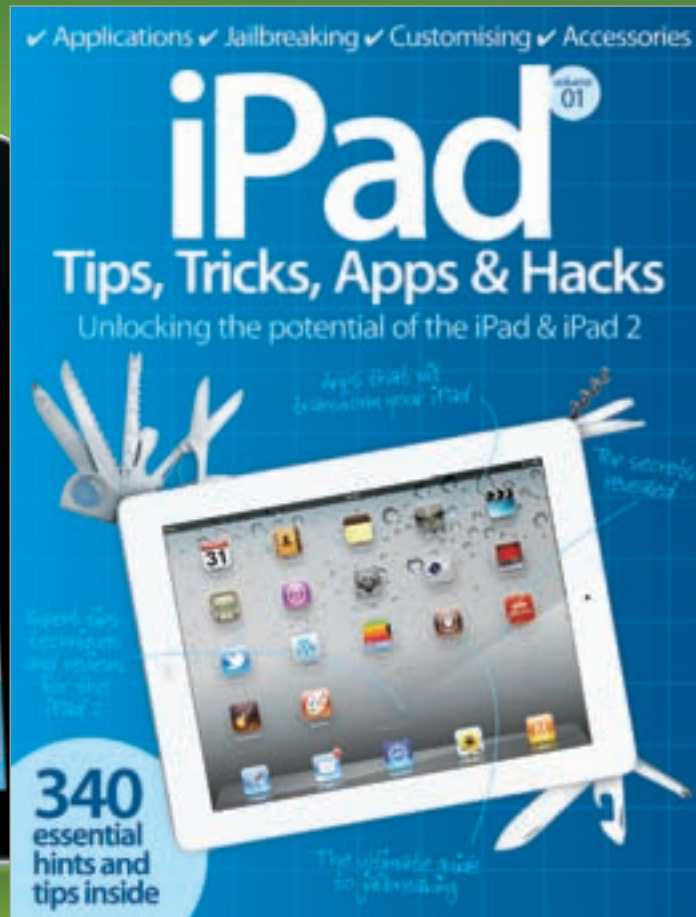
106 Course focus: West Nottinghamshire College

We discover what this college has to offer and why it is ranked within the top ten UK colleges

We don't keep secrets



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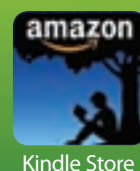
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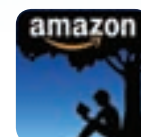
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WELCOME TO THE GALLERY

Nine pages of great artwork from the 3D community

Images we love!

Artist info




**Carlos A Quintero
& Herner Quintero**

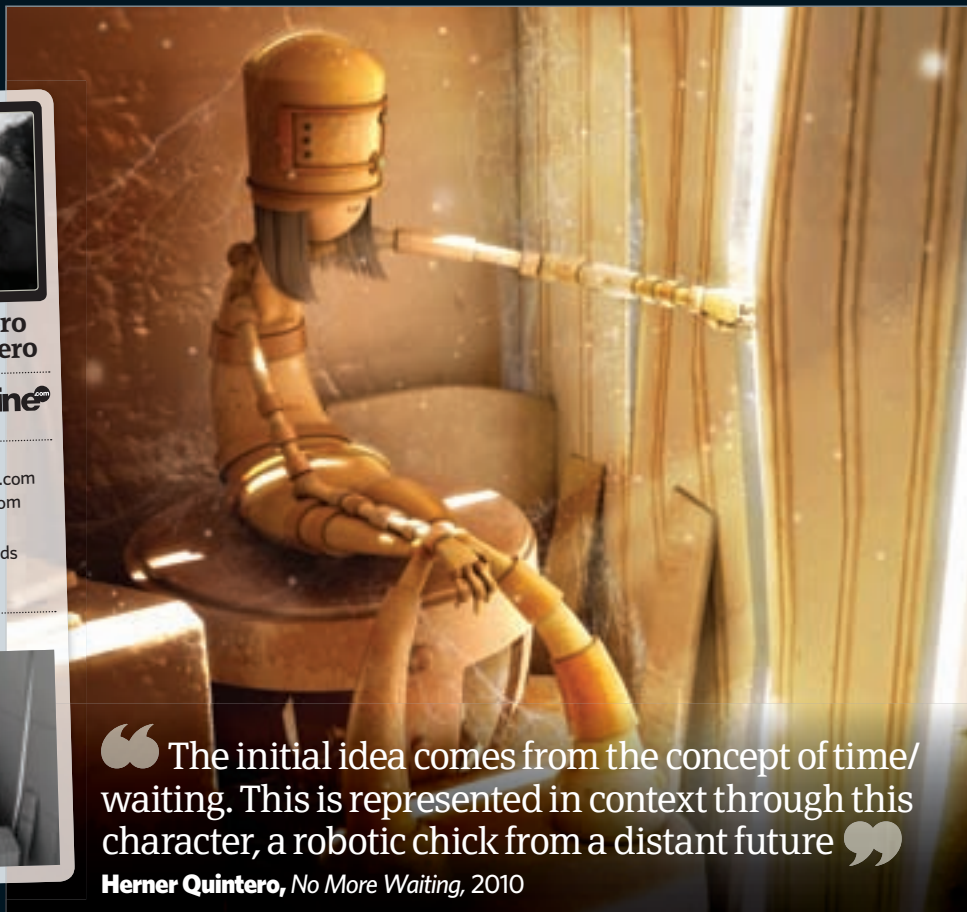
3DArtistonline.com
Username polyvertdges

Personal portfolio site
carlosaquintero.blogspot.com
hernergrafico.blogspot.com

Country Columbia

Software used ZBrush, 3ds Max, V-Ray

Work in progress...

“The initial idea comes from the concept of time/ waiting. This is represented in context through this character, a robotic chick from a distant future”

Herner Quintero, No More Waiting, 2010

Featured artists

**Carlos A Quintero
and Herner Quintero**
Wait no longer!
Begin this month's
Gallery with a
family collaboration



Alfa Smyrna
Some stunning
arc-vis with
something to suit
every season



Kim Stapleton
Check out this
thought-provoking
photo composite.
It's man vs nature!



Slobodan Denic
Van Gogh fans will
love this digital
take on the artist's
famous bedroom



Owen Carson
A tale of two
cities... in this
case Brussels and
Hong Kong



Raymond Yang
A Ferrari might be
Raymond's dream,
but this render is
ultra realistic



Uwe Jarling
Uwe's own 'war of
the worlds' on an
epic scale with
dramatic lighting



Get your artwork featured in these pages

Simply send it to the 3D Artist Gallery. Here's how...

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community, but if you'd rather submit your
work by email or post, here's how. Make
sure your image is at least 3,000 pixels on
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featured on the cover CD, then save it onto
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THE GALLERY



“ I decided to make this series of images when I saw some photos of Toorak Residence in a book. I thought it would be nice to make different seasonal images of a place under trees. I altered the forms, colours and materials to a large or small extent ”

Alfa Smyrna, *Time Under the Trees*, 2009



“ The theme of this second version of *Eternal Life* was based around the idea of entrapment, and of the attempt to harvest and contain the flow of life energy. In contrast to the first image, this space had to be clean and clinical, showcasing a more scientific exploitation of nature, ie white plastic and synthetic surfaces ”

Kim Stapleton, *Eternal Life Energy II*, 2010

Artist info



Kim Stapleton

Personal portfolio site
<http://ev-one.deviantart.com>

Country Australia

Software used
 3ds Max, V-Ray, Photoshop

Work in progress...



The team
Loves

“ The standard of realism on the tree is fantastic, especially the shading on the leaves ”



Jo Editor in Chief

ETERNAL LIFE ENERGY II
THE HARVEST - THE SURVIVAL OF THE STRONG



“ The lighting in this image is sublime and works particularly well on the highlights scattered on table ”



Jo Editor in Chief

Artist info

Slobodan Denic
Personal portfolio site
<http://www.goblenstudio.rs>
Country Serbia
Software used
3ds Max, V-Ray, After Effects



“ The idea was to create an image which represented a photo of the room that Vincent van Gogh used as inspiration for his famous painting *Bedroom in Arles* ”

Slobodan Denic, *Bedroom in Arles* –
Vincent van Gogh, 2010

The team
Loves

“ The colours and detailing really make this image sing, especially the detail around the windows ”



Lynette News Editor

Artistinfo



Owen Carson

Personal portfolio site
www.owen-c.com

Country USA

Software used
3ds Max 2010,
Photoshop CS4

Work in progress...



“ Brussels and Hong Kong were the main inspirations; one influencing the layout of the city, the other influencing its architectural style. This mixing of cultures is also reflected in the different languages in the signs. The overhanging bridges, balconies and signs recall crowded modern cities such as Hong Kong, but this modern scale is complemented by the detailed Art Nouveau craftsmanship ”

Owen Carson, *The River*, 2009

Artist info



Raymond Yang

Personal portfolio site
<http://bignanfer.cgsociety.org/gallery/677819>

Country Australia

Software used
 3ds Max 9, Photoshop CS3,
 V-Ray 1.5 Sp2

Work in progress...



The team
Loves

“ The whole image is excellent, but I especially like the way the objects distort on the car and window ”



Jo Editor in Chief



“ I always imagine myself driving a Ferrari in Italy, parking it on the street and drinking some traditional Italian coffee on a warm Sunday afternoon. Before I started, I gathered as many references as I could and even showed the WIP to my Italian friends. I am happy with the result; I definitely nailed my fantasy ”

Raymond Yang, *The Italian Street*, 2010

“ I had the idea for a picture like this in my head for a long time. To realise the vision I chose to use 3D-Coat and ZBrush to create the model for the alien ship. All the wire stuff was created in 3D-Coat via Voxel sculpting while ZBrush was used to polish and detail the imported 3D-Coat base model and add the rocks. I reduced the polycount using ZBrush's Decimation Master and saved it as an OBJ to bring it into Vue for scene arrangement. After rendering the piece, I took it into Photoshop for post-work and final colour corrections ”

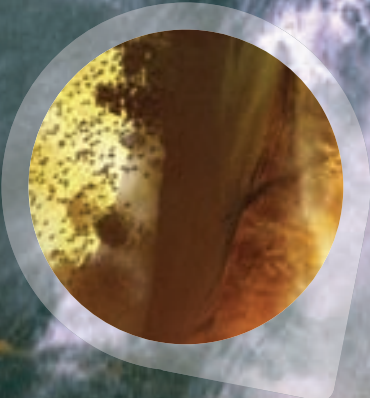
Uwe Jarling, *World Thief*, 2010



“ This is an epic image, with good use of colour and interesting composition. The warm colours help add drama ”



Jo Editor in Chief





Artist info

Uwe Jarling

Personal portfolio site
www.jarling-arts.com

Country Germany

Software used
3D-Coat, ZBrush, Vue,
Photoshop

Work in progress...



Winner of the Texturing category was Samuel Poirier (Vimmy) with an insanely hyperreal image, *The Mysterious Guru of Planet P*

3D Artist online

Submit an entry? Have a favourite? Discuss the CGChallenge results over on the 3D Artist forums at www.3dartistonline.com

Kris Costa (Antropus) picked up a prize in the Modelling category with his entry, *The Taxman from Outer Space*

Schlock horror!



The XXV CGChallenge winners prove just how eye-popping the B-movie can get

Reflecting on days when cinemas startled audiences with low-budget sci-fi flicks, CGSociety presented artists with a challenge: to bring the classic bug-eyed, mutated arthouse film back to life through image and video creation – and audio too.

Artists responded in their droves, with weird and wonderful depictions of the B-movie. With prizes up for grabs including Dell workstations, Autodesk software, NVIDIA graphics cards, Ballistic books and a whole bunch of goodies from Pixologic, Smith Micro and MAXON to name just a few, it's no wonder CGChallenges attract so much attention. But more than that, the prestige that comes with winning one of the CG categories is priceless, and can do wonders for an artist's career.

"Winning the contest gives you some time under the spotlight, which means your work will have more exposure than ever," said Jose Alves da Silva, Image Master Award winner for the previous CGChallenge, themed 'Secret Agent'. "As a result, I am now working as a full-time freelancer in an area that I love, and I am loving it!"

The Blood Mines is a gruesomely violent depiction of mutated miners hacking their victims apart behind flickering screens, by Staszek Marek (Staszek). The gory entry won the Individual Master Award, while it was the freakishly

animated characters that helped Adel Benabdallah win the Individual Video Excellence Award for *The Blob Outspace Zombie Killer*. In the Image categories, CG master Kris Costa (Antropus) grabbed the Modelling award, and Samuel Poirier (Vimmy) scooped the Texturing title. All entrants had to submit a WIP thread as part of their entry, so to see more from these talented artists, visit the winners' pages at http://features.cgsociety.org/story_custom.php?story_id=5718.



“The prestige that comes with winning one of the CGChallenge categories is priceless, and can do wonders for an artist's career”



Tokyo International Film Festival

Date 23-31 October

Location Tokyo, Japan

A key player in Japan's film industry, the Tokyo International Film Festival (TIFF) is now in its 23rd year, set at the Roppongi Hills venue in Minato City, as well as across various theatres and other facilities in Tokyo. www.tiff-jp.net/en

American Film Market

Date 3-10 November

Location Santa Monica, USA

Not a film festival, the American Film Market is where Hollywood's decision-makers and trendsetters gather. From major studio releases to lower budget art films, it's ideal for all independent filmmakers. www.americanfilmmarket.com

SIGGRAPH Asia

Date 15-18 December

Location Seoul, South Korea

SIGGRAPH Asia is a celebration of computer graphics, packed with all the people, techniques and inspiration digital creatives could need. Attendees will benefit greatly from this hub of creative digital media. www.siggraph.org/asia2010



This character was posed using a 3ds Max biped which was then refined in ZBrush

Masterpiece Paying homage



Inspired by the filmmaker, Ed Wood, Mathias Herbster's latest image reflects the director's dedication to the movies

Mathias Herbster <http://deadpixel.tk>

Alone in a miniature-city set after a hard day's work, still in costume, Ed Wood dozes while reading a book by his idol, Orson Welles.

Following a sketch on paper, the building of this scene began with rough boxes and models, serving as placeholders for the final objects to be modelled. With a rough scene established, Mathias could then concentrate on getting a solid composition and camera angle, and build his basic lighting setup. The final models could then be given the required detail depending on their distance from the camera.

"I rendered the image in several passes to composite in Photoshop," Mathias explains. "I changed the colour and blur values of the various layers, and painted the little details, like the dust and glow."

The power of ZBrush

Discover the benefits and rewards



Pixologic is highlighting just how important ZBrush is today in the workflow of artists, designers, modellers, illustrators and hobbyists around the world. The ZBrush Industry Pages are hooked up to examples of production workflow, showing how the powerful sculpting tools are being used in the creative industries. Split into Movie/VFX, Video Games, Illustration, Figure Creation, Concept Design, Scientific Illustration and Jewellery categories, Pixologic is keen to demonstrate the software's versatility. "We hope these pages will help connect and inspire its viewers to explore innovative ways to harness and implement the extensive ZBrush tool palette for successful practical expression and commercial application," Jimmy Golding, Pixologic's marketing director commented. Visit www.pixologic.com/zbrush/ industry for more information.



Pixologic is keen to demonstrate ZBrush's versatility



3D Sketchbook Sketchy sculpts



Italian born and raised artist, Alessandro Baldasseroni sketches quick characters in his free time

Alessandro Baldasseroni www.eklettica.com



Alessandro uses ZBrush to trial his character concepts

Lead character artist at Blur Studio in Venice, California, Alessandro has a pretty simple and linear workflow when it comes to sketching in 3D. After blocking in the basic proportions, he keeps refining until he's satisfied, using plenty of references – particularly when working on a character or creature with a mix of realistic and stylised features.

"Blocking is usually done with ZSpheres," Alessandro explains. "I'm pretty familiar with the classic ones; their mobility really allows me to set the main volumes, gesture and joint positions of the character pretty quickly and in a flexible way."

His main sculpting tools are the Clay, Standard and Pinch brushes, and when he's reached a high level of subdivision, he goes into the fine detail using the Dam Standard and Polish brushes, as well as some custom alphas for the micro details. Once complete, the model is given its final pose using the Transpose Master.

Free 3D Resources

Creatively free!

Get your free models, textures, refs, scripts and more from these generous CG donors

Ant-online

Free goodies from CG artist Antony Ward

Web: <http://ant-online.co.uk>

Antony Ward, a freelance artist with 16 years' experience, is giving away free models on his new website. From a stylised female base mesh to a fully-rigged character, with a free tutorial and script thrown in, Antony's freebies are a great starting point for those

exploring stylised 3D. Check out his tutorial on page 48 this issue.

CGHub

Free scripts, brushes and more at the Hub

Web: <http://cghub.com/scripts>

Artists are sharing their favourite tools with other members of the community and their friends over on the CGHub. You'll find scripts, brushes, shaders and plug-ins – all sorted by application, top rated and most downloaded to help you pick and choose. Rate and comment as you go to help others get the most out of the resources.

Got3d

Free textures and references to be 'got'

Web: <http://free-textures.got3d.com>

Got3d has made a great collection of free textures publicly available. Taking thousands of photos a year, it decided to make the ones that didn't make it to its products free for all. With the usual suspects such as windows, trees and dirt, plus character references and more obscure pics in the mix, you will no doubt find something of use.

Artist spotlight Ideas are the key

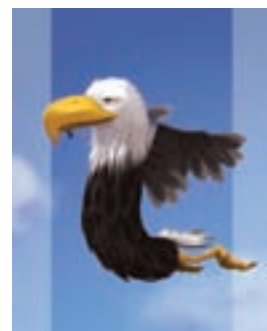


Having worked professionally in the animation industry for ten years, Vincent Guibert enjoys creating his own characters out of hours

Vincent Guibert www.vincentguibert.fr

Exploring the imagination and learning new techniques is what it's all about for Vincent Guibert. Software is not really a huge factor for him, since he sees the key to creating good art being all down to the idea itself. Having fun is of primary importance when it comes to creating characters for his personal portfolio, and this certainly shines through in his final illustrations.

Vincent has worked mainly as a rendering, lighting and special effects supervisor throughout his animation career, often on TV series, as well as films and videogames, and is currently managing the compositing team on *Titeuf le film*, which is an adaptation for the big screen of a famous French childhood hero.



The characters in Vincent's illustrations are playful and always tell a story through their captured personalities



behind the scenes Sheep in revolt



Green Forest Animation Studio has created a film about an innocent pig to test their new pipeline – and to have a bit of fun along the way!

Green Forest Animation Studio www.gfachina.com

The efforts of 15 artists over six months went into the creation of short film, 'Tojie'.

Produced in Shenzhen, China, the film sees a mean, bullying giant sheep in a field where a naïve pig simply wants to enjoy a picnic. In this light-hearted movie, taking revenge into his own trotters, the pig sets about a plan to scare the giant... but falls short when he spots a sausage on a BBQ, rendering his plot unveiled. In the end, a massive, hurtling ball of electrically-charged sheep roll down the hill to see the giant receive his due punishment. It's a hilarious adventure with plenty of charisma and great camera work.

Most of the short was made using Maya, with rendering confidently handled by mental ray. The team at Green Forest Animation rendered passes for the final compositing stage, and this is when they adjusted the colour and camera effects.

"We developed our non-linear pipeline to make every part of the production work together seamlessly," Rick Xu of Green Forest Animation Studio explained. "This was our first attempt to make a project like this."

Lift your spirits with a peek at this short film, which is linked on Green Forest's website: www.gfachina.com.



Green Forest used a boy as reference for the pig to get the animation spot on

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Digital insights

Meet the artists behind the art as they guide you through the process

Digital Art Masters: Volume 5 has 16 pages on top of its predecessor and is packed to the brim with insightful content and beautiful illustrations – 2D and 3D alike. Over 1,100 submissions from artists around the world were reduced to 50 by the 3DTotal team, plus a small collection of industry professionals – namely Tim Warnock, Till Nowak, John Kearney and Chung Wong – who formed the judging panel. The fifth volume in the series boasts page after page of full-colour art, with many double-page spreads that give the book its coffee-table quality; it's a showcase plus so much more! To discover the content before you invest in this latest tome for your digital art library, visit www.3dtotal.com/digitalartmasters_v5 to see the 304-page online preview.



Beautiful 2D and 3D artwork generously fills double-page spreads with breakdowns of the work written by each artist

3DArtist²⁰

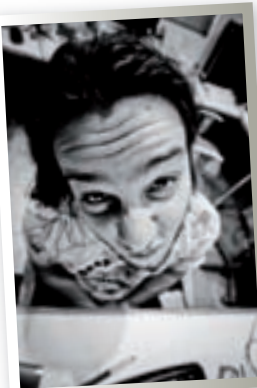
www.3DArtistonline.com Practical inspiration for the 3D community

What's in next issue

Sad Girl
Kleber Darcio
Personal portfolio site:
www.kleber3d.com

Learn how this incredible image was created
Issue 20: on sale 15 September To buy your copy, visit www.imagineshop.co.uk

Mariano strikes a pose in his work studio



Artist inspiration corner Inspiring anatomy

Mariano Steiner hit the spotlight with a tribute to Richard MacDonald's art. 3D Artist finds out more about his tools and inspiration

Mariano Steiner <http://marianosteiner.blogspot.com>

We talk to Mariano Steiner about his love for digital art.

3D Artist: What was it about Richard's work that inspired you to create a digital tribute?

Mariano Steiner: I was travelling in the US and found Richard's gallery in Las Vegas. I was so impressed with his work; I took photos, bought one of his books and got so much inspiration. Once home, I decided to try a 3D version of one of his sculptures. I chose *Showtime* because it's a 'simple' character with a dynamic and poetic pose!

3DA: What were the main tools you used in this project?

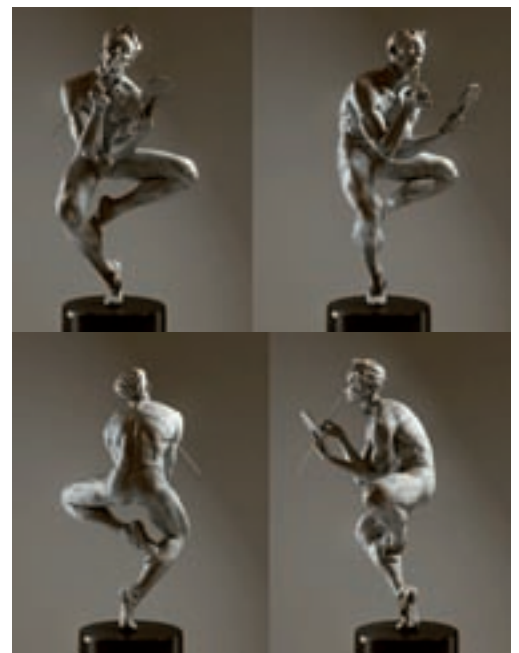
MS: In ZBrush, I used a simple base mesh to block the anatomy and proportions – nothing too fancy, just the

Move, Clay, Clay Tubes and Standard brushes. I then posed the model with Transpose and started refining the sculpt. I modelled the mirror and the brush separately in 3ds Max to append to my sculpt as SubTools.

After finishing the sculpting, I took it to render. I've used 3ds Max since 2008, when I first started playing with 3D, so I made a simple light and scene setup for the model, applied an Arch&Design material with a few tweaks and rendered it using mental ray.

3DA: How important is it to study anatomy?

MS: Anatomy is the most important aspect of a good sculpture. It doesn't matter how refined the sculpture is; if you have good anatomy, it will look good. But anatomy is not quick to learn. You have to practise a lot, have good references, sculpt separate parts several times, like hands, eyes, ears, etc – both human and non-human. I usually search for references on the internet and use guides such as *Anatomy for the Artist* by Sarah Simblet.



Showtime is a 3D digital version of a traditional sculpture by Richard MacDonald (www.richardmacdonald.com)

3DArtist^{online}.com

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www.3dartistonline.com

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The 'right' package

I've been involved in the world of 3D for almost 15 years now, and have yet to write in to any publication. Now I feel it's time to wade in on a subject that's getting under my skin.

In a recent issue, I came across yet another letter, asking 'Why in the world should I buy Maya, or any other expensive application?' ('Poser Argument rages on', issue 14). Look, people, the answer is simple: work backwards. Stop for a minute and think about where you would like to work. What type of studio would make you happy - games, VFX, TV, cartoons, Hollywood films, etc. Once you pinpoint your destination, you simply do the research and find out what application that part of the industry uses.

If you think that talent alone will get you in the door, then you're wrong. Let's say you have a fantastic reel but you did it all with LightWave; any studio using Maya would reject you for the sole reason it'll take too long to retrain you. By the time a studio decides it needs to hire someone, the project is already underway, so they want an artist who can hit the ground running. I know because I have been on both sides of the coin. I am a Maya artist, I have been in the position of hiring, and I have also looked for jobs in the past. If the two don't match up, it will be a no-go. It has nothing to do with



Autodesk Maya
An impressive piece of kit but does it meet your needs?

how 'good' or 'bad' a software package is, and everything to do with pipeline. You might think Poser is great, but if you can't find a studio working in Poser, you're out of luck. Someone once asked me, "What if studios suddenly started to switch?" Well that's unlikely, as they will have invested much time and money into in-house code to enhance their package of choice, so simply dropping an app for a new one would not be cost effective.

So if you think Maya or Max or whatever is expensive, ask yourself this: how much is your future worth? How much do mechanics spend on tools, or academics on books? This is the cost of learning a craft that could pay you back many times over. This point made, if you have no intentions of going pro, then Poser or Blender will be just fine.

And one final bit of advice; I strongly feel it's better to focus on one app for a while rather than trying to quickly become proficient in several. Spending more time with one program will significantly boost your expertise. Otherwise you run the risk of watering down your skills. As the famous saying goes, a jack of all trades is a master of none.

Robert Waterworth, by email

Absolutely, Robert, it's the right tool for the right job - and for movie work, that app is Maya.

Studying for 3D

I recently completed this image for my final year project at the University of Portsmouth (UK) which studied the concept of realism in CGI. Having completed my degree in Computer Animation, I am now 21 years old and currently looking for a junior job position. Being a subscriber to 3D Artist has proved invaluable during my time at university and has assisted in the creation of this piece.

I used to particularly enjoy the Global Student Gallery section after Uni focus [now Course focus] and hope this makes a return! A video of the piece is provided on my showreel (<http://vimeo.com/12553523>) and the software used was ZBrush, 3ds Max, mental ray, Photoshop and Nuke.

Daniel Davey, by email

Nice work creating this creepy character, Daniel. Good luck with finding a position in the industry.

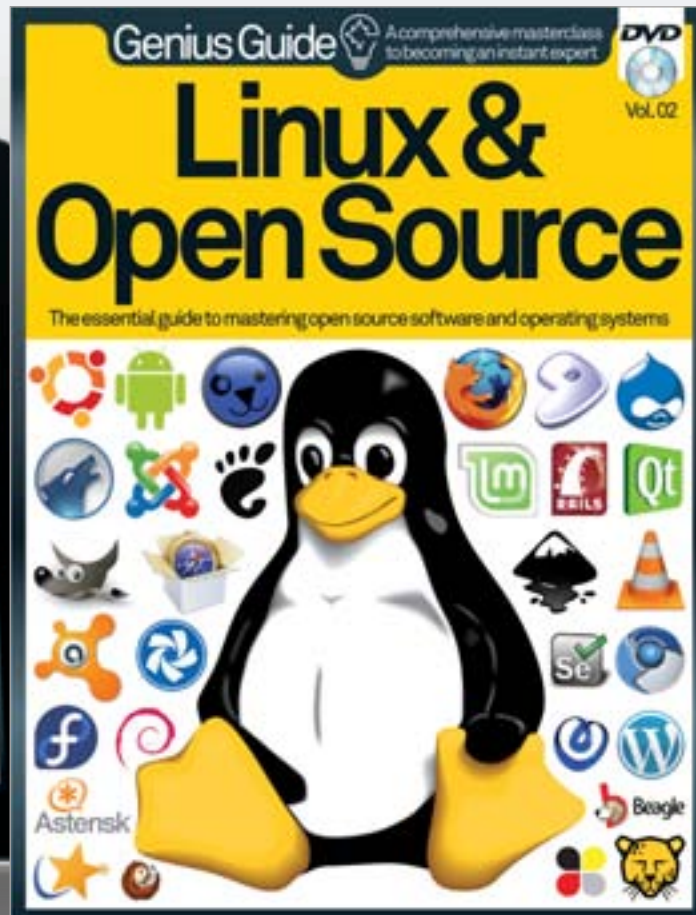


The Gentleman
Model created by Daniel Davey
using a range of software, including
ZBrush, 3ds Max and Nuke

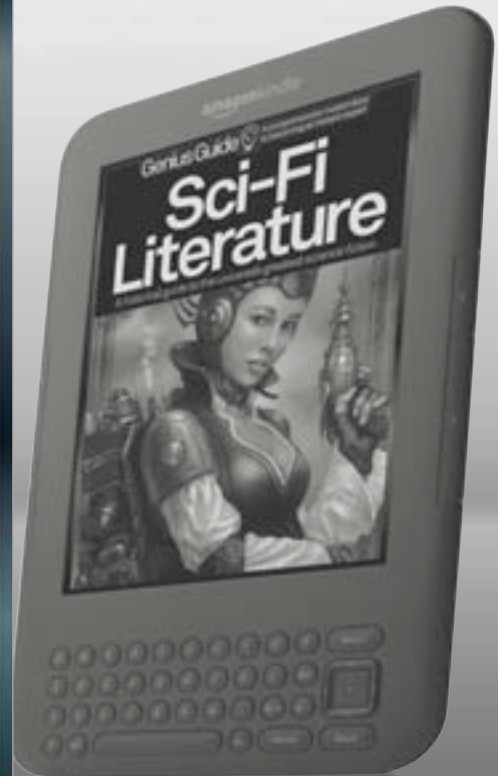
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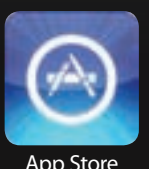
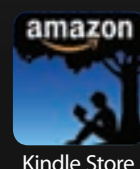
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Want to know what your fellow 3D artists have been creating this month? Check out the best of the online gallery



A Clearance Bot

» **Simon Williamson**

Simon says: "This was modelled using Rhino and rendered in parts using NXT. Constructed using Photoshop."

We say: Good use of composition and some nice surface finishes.

B Retro Radio

» **Rudy Soerodikromo**

Rudy says: "CINEMA 4D retro radio rendered with V-Ray for C4D."

We say: "Good play between the graphic swirls and the 3D radio models. The colour scheme helps the retro feel."

C A Kitchen in the Land of Tuscany

» **Fernando Russo**

Fernando says: "This work was created with CINEMA 4D. It is inspired by a recent vacation to a farmhouse in Tuscany. Very goood!"

We say: "Very good lighting here, which successfully captures the warmth of the surroundings."

D Cupcake Store

» **Heidi Marenger**

Heidi says: "It was inspired by Sonja's Cupcake store in the Philippines. It was part of my final project at school and I took great pleasure in creating it. I hope it makes you a little hungry!"

We say: Lovely cool, retro colours and yes, it has made us very hungry!

Picture of the month



Pictures of the week

THESE ARE THE IMAGES THAT WERE AWARDED PICTURE OF THE WEEK IN THE LAST MONTH



Another View (above)

» **Akiko Okabe**

Akiko says: "Created with 3ds Max and mental ray. I also used 3D grass for this view."

We say: "It's an interesting view, that is still quite beautiful considering it is a very sterile and corporate-looking environment. We like the shadows that suggest the big tree that can just be viewed in the top corner."



Tech Eden (left)

» **Eliane CK**

Eliane says: "Made in Carrara 7."

We say: "It's interesting to see objects that are normally soft and organic rendered in this way."



Sectera (above)

» **Tina Marie Lane**

Tina says: "This is a 3D piece with some post-painting done in Photoshop. Sectera is a sci-fi city built high in the mountain. I wanted to take some shapes that were usually associated with low-tech architecture and give them a high-tech feel."

We say: "Very atmospheric and a good sense of scale thanks to the composition you've used."

Hongcun Village (below)

» **Adam Bielawski**

Adam says: "After completing the Environmental Creation tutorial from Gnomon Workshop, I decided to make my own. I used 3ds Max, V-Ray and Photoshop."

We say: "Good texture on the buildings and the distant mountains work well."



D

» *Cirrus Minor*

Using stratified materials on the rocks nearest the camera, and then a moon and planet in the sky using MojoWorld



The world in your hands

If you want to create your own CGI world, you need the right software. Duncan Evans investigates the best options

Ever since there have been computers capable of creating semi-realistic-looking images, there have been software programs around to help create CGI landscapes. It really started in the days of the Commodore Amiga, when terms such as 'multimedia' and 'information superhighway' were fresh on everyone's lips. Since then, the software has become ever more sophisticated and the images more natural with massed vegetation, stunningly realistic water, architecture and atmospheric conditions being added to the mix. In this feature, we'll take a look at the main options for those looking to create their own piece of CGI heaven, from bargain-basement offerings, to those designed for pro studios.

It wasn't always the case, but it certainly is now. Vue from e-on software is the number one landscape creation program and not just for Hollywood studios. There's a Vue for everyone as the range is split into Enthusiast, Artist and Professional categories. For enthusiasts there's entry-level Vue 8 Pioneer (it's actually free), three pack versions: Fantasy, Fairy Tale and Sci-Fi (\$49.95 each), and Frontier (\$99). Artists get Esprit (\$199), Studio (\$399) and Complete (\$599), while the professional users can look at shelling out \$895 on Infinite and \$1,495 on



Masses of trees

If you want to cover your environment in a swathe of realistic-looking trees without having to go to the effort of planting every single one, then the best solution by far is to use Vue. However, you'll need the version that actually uses the EcoSystem painter which starts with Vue Studio. Large forested areas should generally have a limited number of different tree species – otherwise it won't look realistic. The best way of doing this is therefore to load two or three varieties of the same tree into the EcoSystem and use the airbrush to spray the instances onto the terrain. For really thick jungle canopy, change the density setting so that they can stack up together or it will look more like a city park than a lush forest.

+ xStream. In terms of functionality, the initial packages are fairly basic, concentrating on terrains and manual placement of vegetation. Frontier adds Poser support, while Esprit enables high-resolution renders, more import support and offers a content pack. Possibly the biggest Vue upgrade of recent years was the introduction of the EcoSystem tool that enables vegetation and indeed, any compatible objects, to be spray-painted onto the terrain surface. You only get that from Studio upwards but it really does enable complex environments to be created in a short

» **Woodland Waterway**
Featuring a bridge from Cornucopia3D, this Vue image uses a couple of terrains, lots of tree models and thick cloud cover



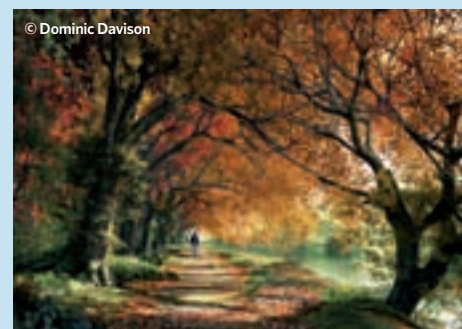
© Dominic Davison

» **English Country Garden**
Vue master Dominic Davison creates the perfect English country garden with this classic scene
© Dominic Davison

timeframe when the alternative wouldn't bear thinking about. The top-end package Infinite incorporates all the modules from the series and in xStream you have a version that integrates with mainline 3D apps like Max and Maya as well.

The heart of Vue is terrain creation with a 2D/3D sculpting interface that has seen plenty of improvement with recent releases. Like any kind of sculpting it takes a good concept and some practice to get a decent result. While the tools are quite good, there's definitely room for expansion and improvement here so look forward to this being enhanced, especially with dedicated brush types, in the twice-yearly updates. For those seeking to re-create existing landscapes, then the ability to import 16-bit heightfield data from

© Dominic Davison



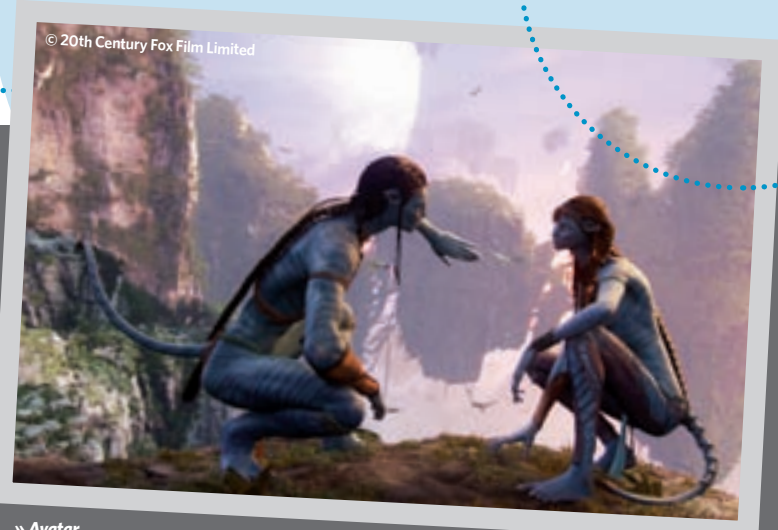
» **Forever Autumn**
Using items from the Cornucopia3D store to create an autumnal feeling with an arching canopy of branches

Landscaping the movies

Scott Brisbane of DreamWorks Animation increasingly uses Vue in his role as a matte painter



Scott Brisbane graduated from USC's School of Cinema-Television with a BA in Cinematography. He then studied matte painting at the Academy of Art University in San Francisco and was hired shortly after as a digital matte artist at Matte World Digital. After creating matte paintings for *The Last Samurai*, *The Alamo* and *Catwoman*, Scott moved to DreamWorks Animation in 2005. His credits as a matte painter there include *Over the Hedge*, *Flushed Away* and *Shrek the Third*. He was then promoted to lead matte painter on *Kung Fu Panda*, the first film where the studio used Vue extensively, creating over 700 shots. In 2008, Scott has served as the matte painting supervisor at DreamWorks Animation for the studio's first stereoscopic movie *Monsters vs Aliens*. This film allowed the matte department the opportunity to push the boundaries of digital environments in 3D. Under Scott's supervision, the team of ten artists delivered hundreds of shots with environments ranging from foreground buildings and distant city views to dimensional aerial cloudscape. After completing *Monsters vs Aliens*, Scott left DreamWorks to work at Rhythm and Hues Studios on *Land of the Lost*, *The Wolfman* and *The Cabin in the Woods*.



» Avatar

Scott joined Weta in the matte painting department as the senior painter where they worked on shots for *Avatar*, now available on Blu-ray/DVD. The floating mountains are only 3D to the mid-ground; the ones in the background are all matte paintings

Scott moved over to Weta in 2009 as senior matte painter where Vue was used on James Cameron's *Avatar*. He's now back at DreamWorks, where he completed work on *Shrek Forever After*. Scott had this to say about using the program: "Vue is one of the most artist-friendly tools I've ever used. It has become an essential package in my workflow for environment creation. In fact, as more and more stereo films enter production, I see Vue becoming an extremely helpful tool in creating those imagined worlds dimensionally."

“For us, Digital Nature has a dual meaning. Firstly, it's Vue's ability to create Digital Nature scenery with all that Vue is renowned for and seen in major cinematic productions: windswept forests, cloud-filled skies and vast mountainous terrains. Secondly, even novice users can quickly create awesome renders. The path between one's own creative Digital Nature and a visually satisfying render with Vue is very straightforward and unobtrusive”

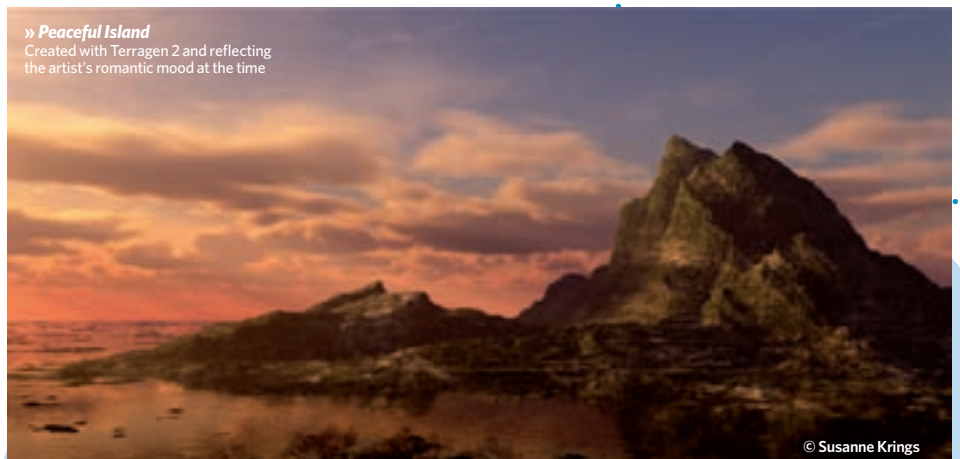
Nicholas Phelps, president, e-on software

external apps or USGS DEM data will be useful. It's the kind of thing that made VistaPro popular in the first place. Also on this front, there's a very handy ability to load a terrain picture as a bitmap, display it inside the Terrain Editor and then sculpt a landscape based on it.

The interface has a more old-fashioned feel to it than, say, Bryce, but it works well and consistently with a four-pane display on higher-spec versions, or a single display on the Enthusiast options. The real quality of the program is in assigning materials to your terrains and whether they are regular or procedural. The infinite procedural terrains have the benefit of automatic subdivision closer to the camera for more detail, and render time-saving general detail further away. Getting into the heart of the program is creating the materials and mixing them, applying rules for greenery, snow lines, scale, etc.

It's the EcoSystem painter that really makes Vue invaluable for densely populated terrains. Any objects can be loaded into the EcoSystem – whether they are clumps of grass, trees or even buildings, and they can be painted singularly for

» Peaceful Island
Created with Terragen 2 and reflecting the artist's romantic mood at the time



precision, or airbrush painted to cover your landscape en masse. This is the feature that the Hollywood studios love and you've seen it at work in everything from *Pirates of the Caribbean* and *Indiana Jones* to *Terminator: Salvation*.

When you throw in mist, atmospheric haze, low-lying fog, the different types of lighting with

editable clouds and then the water simulation where surfaces can be smooth and lake-like or heaving like the Atlantic and you have unparalleled control for realistic landscapes. The caveat to this is that while it is easy to pick up and use, the results tend to be poor on close-up shots until you have mastered the technical aspects.

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“Bryce 7 is a toolset inspired by artists. Based on the input and direction of professional Bryce users and DAZ 3D community members, the Bryce 7 toolset is truly customised to fit the needs of its artists. With updated lighting, rendering and export capabilities, as well as a brand new Instancing Lab that allows users to create even larger scenes that require less memory, Bryce 7 offers more options than ever before”

Dan Farr, CEO, DAZ 3D

Then the results can be jaw-dropping. Vue also supports animation, and this is where studios tend to go for the xStream version. The animation wizard is a bit ropy but there's Poser figure and animation support, atmospheric and individual object and camera animation. Objects can even be configured to react to the terrain.

While there are certain areas that would obviously benefit from improvement, Vue has the kind of breadth that means it can do pretty much everything and you certainly get out what you put into learning it. That's why it's the number one choice for landscapes.

For those looking to get powerful facilities and a good user interface, without having to spend very much, there's a great alternative in Bryce. Originally launched in 1994 for the Mac, Bryce – named after the famous canyon in the US – rapidly overtook VistaPro in the landscape popularity stakes. A PC version came out in 1996 and by 1999 the program had rapidly evolved with version 4 offering a sophisticated SkyLab for atmospherics, better textures and object import. MetaCreations sold it to Corel in 2000 where trees and a few improvements were added for version 5 in 2001. And after that helter-skelter development, it stagnated under Corel until DAZ 3D bought the program and released version 5.5 which allowed import of DAZ and Poser characters – thus expanding the range of the program. Finally in 2006, the basis of the latest version came out with Bryce 6.1 which improved the terrain editing, added HDRI lighting and made it take advantage of multi-threading and multi-core CPUs.

At the moment, a significant upgrade is in the final stages of development with Bryce 7 which will incorporate the Instancing Lab, new light

» **Venedig Kopie**
No post-work on this Vue image;
Rudiger was aiming to simulate a
painting style



© Rudiger Wacknitz

Essential links

www.e-onsoftware.com
www.planetside.co.uk
www.daz3d.com
www.rendernation.com
www.xfrog.com
www.cornucopia3d.com
www.mojoworld.org

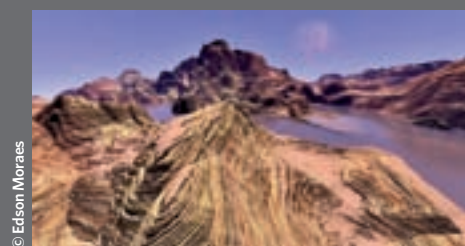
types, more data exchange, improved SkyLab and Material Lab, particle animation and more rendering options. The Instancing Lab allows users to copy objects or create Instances, making it possible to create larger, more realistic scenes than ever before, using less memory. The new lighting includes Distant light, Parallel, Cluster, Dome and a series of 3D fill lights. The data exchange function means models and scenes from DAZ Studio can be imported more easily, while the Sky Lab gets a big upgrade with more tools and controls over cloud settings. Tools include Image Based Lighting (illuminating your scene or objects in the scene with images of light



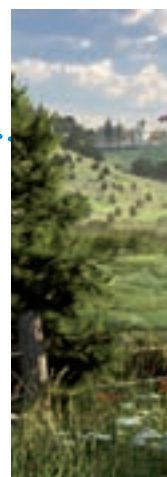
An entire world

Out of all the software applications, from dedicated landscapes, to general 3D, there is only one package that lets you create an entire world in one go and that's MojoWorld. Creating a complex and interesting world is in fact so tough and time consuming that the author of the program

recommends starting with an existing planet and modifying it to your specifications. After that, set the camera down anywhere on the surface or let it loose and create an animation as you soar above the surface of an entire planet. Next up are entire solar systems apparently! Watch this space...



© Edison Moraes



Importing characters

While most software packages can import characters in a variety of formats, if you want to actually create characters and objects and put them into scenery, the fastest and easiest way is to use Bryce and DAZ Studio. Your DAZ characters and objects can be exported at the moment for easy inclusion into a Bryce scene, but this relationship will get even closer with the release of Bryce 7. Vue has a few tricks up its sleeve as well with the Enthusiast versions, so that Vue Frontier supports physically posing the Poser characters making animation a real possibility.



© Bernie Stafford

» Dawn Patrol
Using an Anders Leczar model, rendered in Bryce for the clouds

from the real world), added capabilities for HDRI images (saturation control, transparency and HDRI from inside), soft shadows for IBL, specular map settings and Powerful Sun options.

So it's all cooking in the Bryce world, but how easy is it to pick up and how good is it in practice? Well to answer the first question you need to go back to the beginning. It was developed on the Mac and ported to the PC and it's had the same bizarre and idiosyncratic interface since. Let's say that it's full of good stuff, though vegetation isn't a strong point, but you'll need to learn the interface to use it. The best parts of Bryce are the terrain creator – but note this is 2D with a 3D preview, the various sky types and the Material Editor.

Back in the good old days, before the rise of the PC, the Amiga world gasped with amazement when the original Vista program brought CGI landscapes to the desktop. Using fractal technology, where previously blank polygons had ruled supreme, we marvelled at the swathes of

» Old Ironsides
Created with a ship that Bernie Stafford modelled himself



© Bernie Stafford

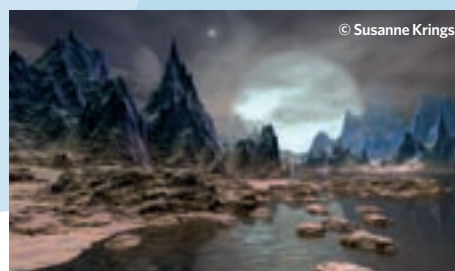
greenery. Surprisingly, the veteran software package is still around, and at \$50 from VendorNation it would appear a worthy alternative. However, like giving a Lada a new paint job, it might look shinier, but it's still pretty abject compared to a Jag. And so it is with what's left of the VistaPro franchise. You can buy DEM map packs for it that look kind of realistic if you squint, but the basic interface is the same as 15

years ago and the results simply don't stand up to any modern alternative.

Back to the modern world and there's a brace of options for those that like to get their rendering fingers dirty. We're alluding to Planetside's Terragen 2 and Terragen Classic, which is a simpler version. Both versions can be downloaded and used free for noncommercial use but they do have limitations. These include rendering limited to 800 x 600 on Terragen 2, lower detail and anti-aliasing quality, a limit to three-object populations and no animation. On the plus side, you can get to try the products out for free before deciding whether to lay out \$299 for Terragen 2, \$399 with the animation module and \$699 with XfrogPlants. The commercial versions also offer five additional render node licences, tutorial videos and no restrictions. Terragen Classic can be upgraded for commercial use for \$99 – pitching it directly against Bryce and Vue Frontier. If anything, Terragen 2 is the spiritual successor to VistaPro, using complex fractal technology to render stunningly realistic landscape terrains right from



© Lars Braad Andersen



© Susanne Krings

» Countryroad Slope
The aim here was to re-create the look and feel of a small countryside lane in a very hilly area of Western Jutland, Denmark, in midsummer

» Blue System
Radial lights were used in this Bryce scene (of which one has a violet tone) to add that additional ethereal tint to the mountains on the left

» Twomobo

Martin Roes specialises in alien deserts with lots of detail and, of course, it just wouldn't be a MojoWorld without some extra planets in the sky

Realistic landscapes without hassle

If there's one strong point about Terragen it's that anyone, once they figure out what does what, can create the most photorealistic terrains with the minimum effort. There is a steep learning curve just to get to grips with the program, and as a rendering engine it isn't fast either, but the textured surfaces have a craggy and dirty look to them that makes a Terragen landscape distinct. Shots from a high elevation look like photos taken from an aeroplane window. Mastering the node-based shader network is key to creating variety and compelling realism in close-up shots.



the start. The interface, though, is something of a horror show for the newcomer, being a node-based system where each element can be adjusted and tweaked as it feeds the next.

The shader tree setup does allow for plenty of control and has a similar pipeline and technology to traditional 3D software. This is no accident as the founder of Planetside worked for award-winning VFX studio Digital Domain, where the company developed its own proprietary terrain-generating software. Much of that technology went into Terragen 2 which was subsequently used to create landscapes for films such as *The Golden Compass* and *The Wicker Man*. It's definitely worth looking at both versions of the software before deciding on purchasing either. The strong point about the program is the quality of the results, the weakest being the heightfield editing possibilities.

As Xfrog Inc was just mentioned as the main supplier for a massive set of bundles with Terragen 2, it's worth elaborating at this point exactly what the company has to offer. Xfrog Inc provides DVDs containing highly realistic plants, trees, flowers and grasses as well as a plethora of objects suitable for use in landscape CGI. There are 29 DVDs of XfrogPlants alone, massive bundles and also a separate program – itself called Xfrog. This comes as a standalone app or as a plug-in for CINEMA 4D or Maya and is used for organic modelling and animation so you can create your own vegetation.

Third-party object creation is in fact key to expanding your chosen landscape CGI program with all manner of flora, transport and architecture. As well as the Xfrog material, e-on's Cornucopia3D store sells a massive amount of objects for all versions of Vue at a fairly low cost,

“Terragen 2 features industry-leading displacement rendering performance and flexibility, allowing realistic detail from orbit to centimetre scale. A sophisticated planetary atmosphere model allows creation of unlimited cloud types, while a global illumination lighting model optimised for large scales contributes to overall cloud and atmospheric realism. TG2 is uniquely capable of realistically rendering large-scale natural environments, freeing you from the limitations of ‘set-oriented’ scenes”

Oshyan Greene, business manager, Planetside Software



The sky's the limit

Most of the landscape-creating software can manage great-looking skies, but if you want complete control, you need Vue Frontier or upwards with the new Spectral 3 cloud system for layers of clouds. In fact, clouds now can even be independent objects that can be resized, rotated and rearranged just like any other object. The clouds themselves have their own internal density, which affects how light travels through them, detail can be refined for close-up views and cast realistic shadows over the ground detail. It means that you have total control over both the look and feel and the actual shape of cloud cover in all your outdoor scenes.



» *Waiting for Grandpa Kopie*

A fairly complex scene requiring accurate object placement and use of Vue's EcoSystem function to populate the foreground

© Rudiger Wacknitz

Making it look real

Gill Brooks is an established Vue artist. Here she gives her insights into what makes for a superior CGI landscape

Realism

If you're trying to get a realistic render, then use photographs for reference. If using your own, try to create as near to the exact picture as possible. Notice how the light reacts with the objects in the photo – plants, buildings, people, etc. Try not to use any additional lights, but if you really must then use as few as possible and make sure you only have one shadow. All lights will cast shadows so if they are in varying directions you'll get multiple shadows which is unrealistic in daylight scenes.

Plan ahead

In any type of scene, it's always best to plan beforehand rather than just plopping things along the way. If you're not using photo reference, then make a sketch – even the roughest sketch will help you plan.

Trees

If you plan on using trees close to the camera, try to use good-quality models rather than the native Vue trees. Even the HD are not really close-up quality due to the leaf planes. If you don't own a program such as OnyxTree or Xfrog, there are plenty of models for sale at Cornucopia3D and other stores.

Scale

When you load a Vue terrain, remember it's only 5.375yds high and 28yds wide. Mountains are somewhat larger! In any type of scene, make sure your objects are scaled to each other. Nothing's worse than a small house with a giant standing in front of it – unless it's a fairy tale.

Post-work

Don't think that rendering is the end. Post-work not only enhances your image but also adds a personal touch. Even just a little lighting correction can go a long way to making an ordinary render pop.



© Lars Braad Andersen

» *Winter Forest*

With temperatures above freezing point, fog and mist will appear when the relatively warm and damp air meets the frozen ground. This kind of weather, alternating frost and thawing, is quite common in Denmark

» *Der Maierhof*

The Vue EcoSystem tool was used to populate the foreground with hay and a few poppies



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THE SORCERER'S APPRENTICE

Duncan Evans talks to Graham Jack from Double Negative, the CG supervisor on Disney's *The Sorcerer's Apprentice*

Digital wizardry

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Name Double Negative

Company website
www.dneg.com

Country UK

Software used Maya,
Houdini, Squirt

Expertise Visual effects for
film and TV

Client list
Disney, Warner Bros,
Paramount

“Once production ramped up to hit the final shot count of around 450, there were 160 people from DNeg on board, encompassing 20 animators, 25 lighting technical directors, 60 FX technical directors and 60 composers”

Graham Jack, CG supervisor, *The Sorcerer's Apprentice*

The words 'Sorcerer's Apprentice' to most people conjure up visions of Mickey Mouse and dancing mops, but with this latest big-budget release, Disney has managed to produce not only an entirely new story full of spectacular effects, but also pay homage to that classic scene from years gone by. Double Negative, along with studio The Asylum, was the main supplier of the wizardly CGI and we caught up with them shortly after production wrapped on the picture.

Graham Jack, CG supervisor for the film, started work on *The Sorcerer's Apprentice* in early 2009 with a small team, at that stage doing tests and development work on the look of the different magical effects in the movie. Once production ramped up to hit the final shot count of around 450, there

were 160 people from DNeg on board, encompassing 20 animators, 25 lighting technical directors, 60 FX technical directors and no fewer than 60 composers, plus sundry other roles like matte painters.

3D Artist: *At the start of the film, in a sequence known as 'The Battle Begins', Morgana, played by Alice Krige (once the Borg Queen, fact fans), summons a pentagram of fiery energy above Manhattan. How did you create this?*

Graham Jack: The circle consisted of a Houdini particle sim, which made up the trail of embers left as the energy travels through Manhattan. The head of the energy stream was a fire sim created using our fluid solver, Squirt. There was another Houdini particle sim that used velocities from a fluid

A Balthazar, played by Nicolas Cage, stands watch over the city, against the shenanigans of his arch rival Horvath

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sim to push the particles to get a more realistic motion to the embers. There were also a bunch of other data passes like motion vectors and distortion passes which were used in comp to create the final effect.

3DA: *The first of the major sequences DNeg worked on was the homage to Mickey Mouse and the animated mops in Fantasia. How much fun was this to do?*

GJ: It was a lot of fun, particularly in the early stages when coming up with ideas for how the various props might move. The animators tried out different types of behaviour like a mop that acts like an excited puppy and things like that. We were also trying to previs the sequence, coming up with funny little set pieces and gags that could be placed into the storytelling.

3DA: *The dog gets a wash and brush up – was it a real pooch or a CGI one?*

GJ: It was shot with a real dog and a guy in a green suit was sponging it down. The dog didn't like getting wet so, in addition to painting out the guy in the suit, we had to add water and soap coming off the sponge and running down the dog's face.

3DA: *Dave, played by Jay Baruchel, has a laboratory that gets flooded in this sequence. Was that all CGI water or was real water used on a physical set?*

GJ: They built the whole set so that it could be flooded for real. Most of the shots had real water in and we just added patches of CG water and spray around the props where they interacted. Georg Kaltenbrunner was the FX lead on that sequence and he did a great job of setting up a pipeline that used the velocities of the animated props to generate the water and spray. We also had a couple of shots where we needed to replace the water completely. These were challenging as they were at the sort of scale which are close to the limits of what we can simulate directly. It was also tricky as we

C Balthazar at work with a plasma ball. At first DNeg was unsure how to make these look as no one had a concrete idea of what a plasma ball looks like



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had props dropping into the water affecting the main water sim, but those props in turn had to be moved by the water. This was particularly difficult with deforming props like the mops where the tendrils needed to be pushed around by the water. Georg came up with some clever stuff going back and forward between our fluid solver Squirt and Houdini for the prop dynamics.

3DA: *In some ways, animating dancing mops looks relatively easy – were there any problems creating them for this sequence?*

GJ: The mops were actually pretty challenging. They had to be able to do everything from behaving exactly like a real mop to picking up and manipulating other props. The director was also keen that everything had an element of realism to it so it wasn't just a case of building a mop and rigging it. Every time we built a rig, we'd try it out and then hit a shot where it didn't quite hold up. Each time our rigger, Mattias Engstrom, would go back to the drawing board and come up with something cooler and cleverer. We had a dynamic setup built into the rig so that the animators could bunch the mop tendrils up into legs and

control how much of each leg was dynamic. This meant you could have just the tips dynamic and the rest of the leg following the animation, or you could have the whole leg following the animation but the outer tendrils dynamic. The animators had a basic set of controls to complete this in order to establish a preview; then we had cloth TDs who developed the final dynamic rig and tweaked it.

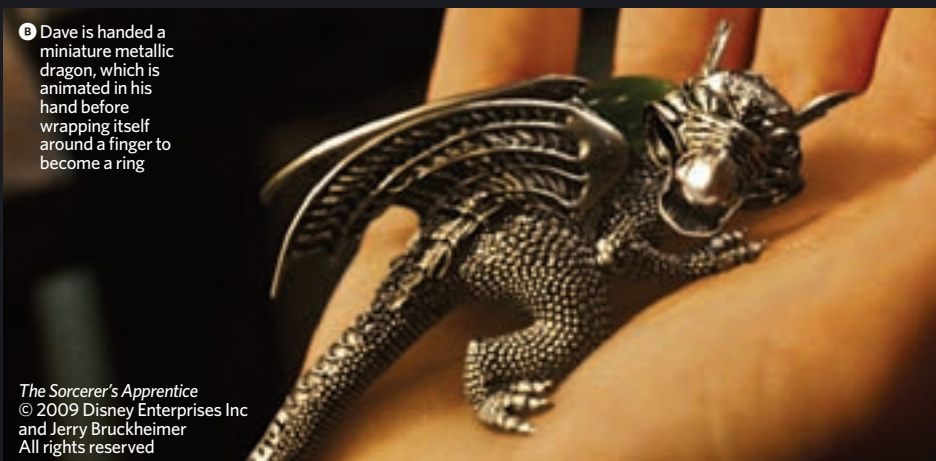
3DA: *There are lots of fluid simulation effects in the film – water, fire and even plasma balls. How did you go about creating these effects, in terms of using off-the-shelf software (Maya, Nuke, etc) or proprietary tools?*

GJ: We're lucky at DNeg to have a pretty sophisticated proprietary fluid solver so that formed the core of most of the simulation work on the film. The best results used a combination of tools though. Since most of the effects we were trying to produce were meant to be magic, relying on a pure simulation of reality wouldn't give us enough control. Some of our fire shots used a Houdini particle simulation to create velocities, which could then be fed into the fluid solver to cause the fire to perform a particular action. For the water we would do liquid sims in our fluid solver, but a lot of processing was then done on the resulting particles in Houdini to cut certain areas out, and so on, before it was turned into a mesh. We were also taking velocities and other attributes from the fluid sim and using them to create foam and spray particles in Houdini. The plasma involved a fluid sim for the smoke coming off the plasma along with Maya particle sims for sparks and debris.

3DA: *Did you do matte painting for any of the scenes? If so, which ones and what software did you use?*

GJ: We used matte paintings in a few of the sequences. In particular there were several

B Dave is handed a miniature metallic dragon, which is animated in his hand before wrapping itself around a finger to become a ring



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D, E, F Early on in the film, Balthazar gives a practical demonstration to Dave of the possibilities of magic by turning his car from old to new. The entire sequence was created with CGI cars on a live action plate

G This is an earlier shot of Balthazar creating a plasma ball – they get more sophisticated in later shots



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+ matte paintings in the Battle Begins sequence. In addition to extending many of the background buildings, we created cycloramas from photographed plates so that we could create a series of new camera moves which matched the timings of the fiery energy. We used Photoshop to produce the matte paintings.

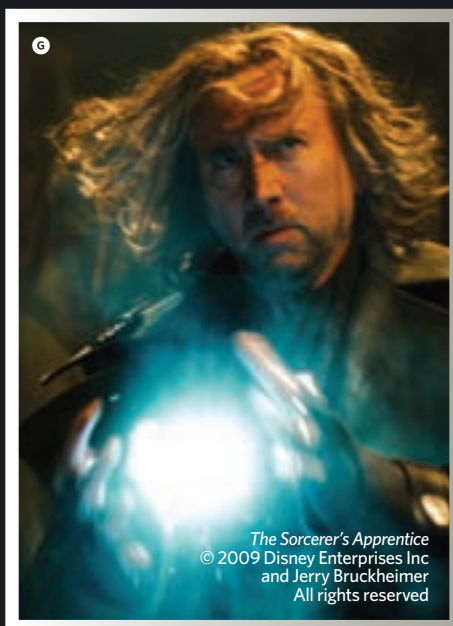
3DA: Turning to the training room where Dave learns to create plasma balls, was that all done digitally or was it a mix of CG plasma balls and then practical effects on the set itself, such as smashing cups, etc?

GJ: There was a combination of practical and CG effects. Every plasma ball shot had a CG plasma ball, a smoke simulation and particle simulations for sparks and debris. In most of the shots there was practical interactive lighting, but this needed to be enhanced, while in others, this had to be painted in from scratch. There was also practical SFX in some shots for exploding debris and things like that; again, some shots needed this adding digitally.

3DA: In the action-packed Wall Street bull sequence, the statue is brought to life. Did you use any real-world references of the statue or real bulls for sculpting the model and animating it?

GJ: We had plenty of useful reference from the real Wall Street bull statue. We had a 3D

scan of the bull to use as a starting point and, using that pose, we could render it into a plate next to the real one. For animation



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reference we scoured the internet for videos of bulls charging. The best references that we could find were from rodeos.

3DA: Did you have to do any digital stunt double replacements? If so, can you tell us

how difficult that process was?

GJ: We were fully prepared to do full-scale digi-double replacements for stunts, but it's a credit to the skills of the stunt crew on set that we didn't end up needing them. We did do a few face replacements where it was obvious in the shot that it was a stuntman rather than the principal actor.

3DA: Did you have to do any set clean-up, removing objects that shouldn't be there, etc?

GJ: There was a lot of clean-up work. In the Fantasia sequence, there were real props which were being operated by guys in green suits – they all had to be removed. Whenever the characters were casting plasma or fire, they had LED lights in the palms of their hands so that light would be cast onto them and their surroundings; these and their wiring had to be removed. The Tesla sings sequence was particularly tricky as the main characters were in a wire cage in the centre of the room with bright strobe lights going off behind them, which all had to be erased.

3DA: A lot of the film takes place at night. What are the challenges and advantages of nocturnal filming?

GJ: Both day and night have different challenges. During the day everything is obviously more lit, so it's a bit less forgiving for CG characters. At night the lighting environment can sometimes be a bit more complex as they'll be using a lot more lights. There's also less detail in the photography, so if you need to add light created by an effect then the detail will need to be painted for areas originally in shadow.

3DA: Can you run through the other areas of the film you worked on?

GJ: There's a lot, but some major ones are:

Merlin circle – Balthazar conjures a magical circle which is burnt into the floor of Dave's lab. Initially it was meant to be mainly practical but we ended up replacing most of the fire.



H Horvath, played by Alfred Molina – last seen in Disney's Prince of Persia – conjures up some flames, courtesy of the fluid simulator

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1 You can tell Gregory Woo's character, Sun Lok, is evil – the fingernails are a bit of a giveaway

Tesla sings – A number of tesla coils fire in the lab with the lightning synchronised to music. The clients were keen that we got a really close match to the behaviour of real tesla coils which was pretty tricky.

We also oversaw a few other sequences that were outsourced:

Veronica fusion – Part of the opening flashback sequence where Morgana's soul is torn out of her physical body and trapped within the grimhold.

Quick rug – Balthazar steps onto a magical 'quick rug' and starts to sink into it.

Morgana birth – Morgana is released from the grimhold in a mass of black ectoplasm type stuff which bubbles up to form her.

3DA: *The other main set piece that DNeg worked on was the final battle with a spectral version of Morgana. Tell us about that.*

GJ: The final battle sequence involved lots of fire and plasma FX, but the biggest challenge was the spectral form of Morgana, a creature made up of constantly shifting particles. Spectral Morgana ended up being the trickiest effect on the movie, mainly because no one really knew what she was meant to look like.

3DA: *How much input did you get from the director on the look and feel of this shot? There are a lot of particle and fluid effects going on, did that make it tough for your pipeline to cope with?*

GJ: We had a lot of input from the director,



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with conference calls every week, where we'd show our latest work and he could let us know exactly what he wanted.

The pipeline coped pretty well with the FX work. We were able to import a published Houdini file to pull in the cameras and body-track geometry for the shot. We could then do a publish from the Houdini file that would do all the simulation work on the render farm. Once this was completed, we could build a render scene and tweak the parameters there. This meant we could get a standard Morgana shot fairly quickly so we could focus on the shots that were more complex or required specific actions from the particle sims.

3DA: *Lastly, were there any other problems with the production you had to tackle?*

GJ: The biggest problem we faced

throughout the project is that so much of what we were doing was very subjective. No one really knows what a plasma ball looks like or what form a 'spectral' creature takes. This meant a lot of creative dead-ends as we developed effects the director didn't have in mind. We tried to solve this by doing lots of concept art and quick FX tests early on. Three people ended up designing most of the effects that went into the movie: Jonathan Opgenhaffen was our concept artist, ZBrush sculptor and all-round ideas person; Chris Mangnall is one of DNeg's most senior FX artists and was able to turn complex FX around in astoundingly short timescales and David M Scott took all manner of random passes from CG and turned them into lots of cool-looking versions that we could show to the clients.



1



2

1 2 One minute there's a Chinese festival in the streets, the next minute Sun Lok has turned it into a rampaging dragon. This was handled by The Asylum

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Double trouble

Working in stereo means twice the content, and with it many more issues to contend with. However, technology is coming up trumps to improve workflows in an industry where stereo is set only to grow

Back in the Eighties/Nineties, CG movies were created because they visually impressed their audiences. The hook then was the VFX, and history is now repeating itself with stereo 3D. And while stereo 3D production takes precedence and the development of new skills becomes the focus, the storytelling will, no doubt, take a dip for a while. We're already seeing vast improvement in stereo production as artists' sensibilities are improving and they begin to instinctively notice the good and the bad, but audiences will also become wiser – and more demanding.

Now is a ripe time for the conversion of footage from 2D to 3D, saving not only time and money, but also opening up opportunities for existing 2D content to be converted for new audiences. But the 'crunch time' will come when expectations for originality will need to be met once again. There

wasn't anyone talking about 2D-to-3D conversion a year ago. Look now, however, and everyone wants a piece of the stereo action, as clients with varying expectations and requirements dip into the ever-growing 3D trend.

Answering this mammoth demand for stereo, artists in the industry are picking up the tools required to keep themselves employable and indispensable. Technology is responding to artists' needs with stereo support and fixes for the most common problems. We take a look at the evolving workflow involved in stereo 3D production and postproduction, as well as some of the problems when it comes to dealing with double the trouble.

Shooting in stereo

It could take years to learn all there is to know about shooting in stereo. The basic idea is to capture two different points of view, for the left

The great debate

Pure stereo production versus 2D-to-3D conversion

There are a lot of unhappy people when it comes to the topic of stereo conversion. For cinematographers it is an art and craft and they see conversion as a poor shortcut. There are others who look at it from a time and cost perspective and can see the advantages that it offers, and then there are those who just want to post-process. The cinematography forums are a great place to follow stereo 3D discussions. Subscribe to the CML lists to stay atop of the latest happenings at www.cinematography.net/read/all_forums.

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2 Arri D21s on a side-by-side rig ready for New Year's Eve fireworks ignition

Shooting the London Eye 4D Experience

Phil Streather, CEO of Principal Large Format explains when to shoot with big cameras side by side

From left to right: Steve Desbrow (aerial camera op/tech), Julian Napier (director), Phil Streather (producer)



© Phil Streather

"It is becoming increasingly well-known in 3D production circles that in order to shoot things relatively close up (6ft), with wide-angle lenses (10mm on 2/3" chips) you now need to use a mirror rig. Mirror rigs use a half silvered mirror so that one camera looks through the mirror from a horizontal position and the other camera takes the image reflected from the mirror. In this way, the centres of

the lenses can get closer together than the bodies of the cameras allow, were they placed side by side.

"What is less well known are the circumstances under which successful 3D can be achieved with big cameras side by side; not because of the absence of a mirror rig, but as a creative choice.

"On Merlin Entertainments' London Eye 4D Experience (written and directed by Julian Napier)

we made creative use of side-by-side shots in key areas: the wide-angle shots of the fireworks across the Thames and the unique aerial shots of London.

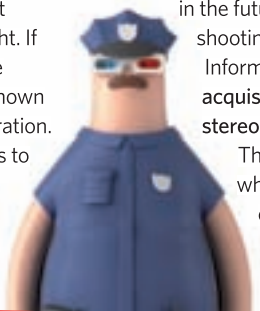
"The argument against wide interoculars is that you can end up miniaturising your subject. But, if the subject is far enough away (eg 1,200ft in the case of the Eye) such miniaturisation needn't be a problem.

Website: www.plf.cc

+ and right eye respectively. From these two different perspectives the viewer's brain should be able to determine the stereoscopic depth, interpreting the image in 3D. Shooting for stereo therefore requires two lenses, the setup for which can be done in a number of ways.

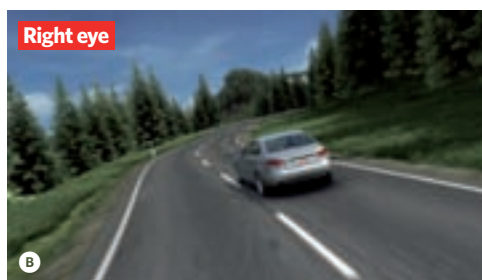
The distance between the centres of the two camera lenses is most often referred to as the interaxial distance. This is the most important – and crucial – to get right. If we were talking about the distance between our eyes, this would be known technically as the interocular separation.

It's important for stereographers to keep the human interocular separation in constant consideration in order to make calculations for the interaxial



distance between the camera lenses. The adult human norm is 62-65mm. If you overcook your interaxial, it's difficult to salvage in postproduction; if you undercook it, you could end up with 2D footage! The art is to use what works for 3D, and what is natural to the viewer. At the moment, shooting in stereo is still very technical and left to the stereographer, but it will become more creative in the future. You can find a beginner's guide to shooting in stereo on the Digital Video Information Network: www.dvinfo.net/article/acquisition/a-beginners-guide-to-shooting-stereoscopic-3d.html.

There are a few key words you'll hear a lot when it comes to stereo. Phil Streather, CEO of Principal Large Format, has compiled a great list of 3D production terms – a handy sheet for reference which you



Rig it! Side-by-side versus mirror



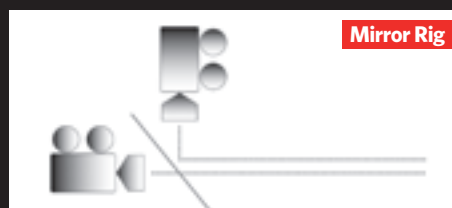
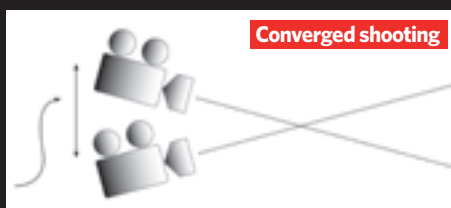
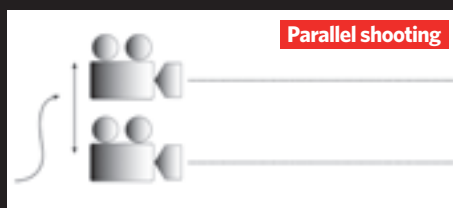
When filming in stereo for film, a camera rig is needed. A side-by-side rig is able to achieve at least the minimum human interocular separation. Mirror rigs are useful when the interaxial needs to be less than the average – with this method you can go right down to zero interaxial, so it's vital for close-up work (but also a lot more expensive). With this method you can shoot in

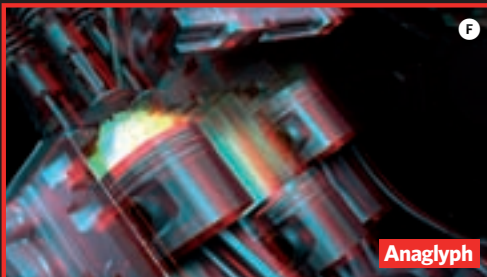
parallel or converged, which brings us to the stereo world's next argument...

Right now there's a fierce war between shooting in parallel versus converging cameras. When shooting in parallel, there's no convergence, which means it has to be done in postproduction, avoiding keystone issues. The benefit of converged shooting is that you don't

need to sort the convergence in post, so it's a matter of opinion as to which method works best.

"There's no one single 'right' way to shoot stereo, there are only preferences," Julian Napier, a 3D director, has said. "The beautiful reality is that 3D production is very much dependent upon your stereo objectives, and upon the audience's 3D expectations of your film."





D E F Unexpected in Germany is using conventional software solutions like 3ds Max for all the 3D stereo workflow, with Fusion, After Effects and Nuke for stereo postproduction

can find at <http://nortega.com/?p=429>. 3D filming language is new and technical so will take a while to get used to. Don't expect to pick it all up straight away!

The point of convergence is basically where two images intersect. This has zero parallax, and at this point objects will appear on the screen plane. Positive parallax is when things appear beyond the screen, and negative is when objects are seemingly in front. With excessive positive parallax, eyes will be forced to diverge; with too much negative parallax, eyes will be required to converge uncomfortably. Getting this all right requires careful planning in the shoot. There will almost always be problems when shooting in stereo – many of which can be fixed in postproduction, some easier than others – but it helps if the shoot is done right in the first place.

“When mixing CG content with live-action footage it's important your virtual camera rig matches the physical camera rig closely”



A B C With the success of 3D movies over the past year, Unexpected in Germany has seen a rise in demand from advertising agencies in particular



You can make almost any camera work for the job of stereo, but the various issues to contend with are plentiful. Camera misalignment, keystoneing, floating windows and ghosting are just a few of the main challenges to consider, but thankfully most of these are becoming less problematic as 3D camera rigs advance.

3D CGI stereo production

3D CGI stereo allows audiences to fully immerse themselves in a fantasy world. The principle of creating 3D CGI stereo is the same as modelling, lighting and animating as you would for a 2D presentation, but involves duplicating your camera to get two views – one for the left eye and one for the right. This very easily gives you stereoscopic images. But it's not quite that simple, of course...

As with shooting in stereo, there are certain considerations to keep in mind when setting up your virtual cameras in your 3D application of choice. Unlike the arguments with shooting in stereo in the real world, when it comes to the virtual 3D space, parallel seems to be the way to go – you're likely to find a lot of unwanted image distortion with converging cameras. As with real-world stereo shoots the human interocular distance needs to be a constant consideration when determining the interaxial distance between your cameras.

Choosing your composition is important. When working with parallel cameras you'll only be able to use the section captured by both cameras, meaning you'll have to allow for enough extra space at the sides. You'll also need cameras that move together, so that when you drag one the other will follow. This is easily done by choosing your view with your main camera and duplicating that twice to create your left and right views. Linking these cameras to your main one will mean that when you move it, the duplicates will also move, allowing you to re-compose your shot as well as perform stereo tracking in animation. Both shots need to be rendered out to get the stereo pair, and the stereo system you're going to use to

Creating stereoscopic 3D

Ben Kitching, 3D and CAD consultant at Jigsaw Systems reflects on creating stereo 3D in CG applications



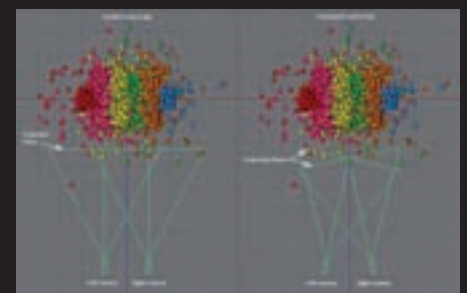
Creating stereoscopic 3D in CG applications is just a matter of placing two cameras instead of one into your scene and then exporting two video streams, one

for each eye. Maya, for example, has some great built-in camera rigs and will even allow you to edit in stereoscopic 3D on a range of different displays. LightWave and modo also have tickbox options allowing you to convert a single camera into a stereoscopic one, but these don't give you the visual feedback Maya provides. Exporting stereoscopic content is fairly easy; the challenge comes with making that content interesting and not giving your viewers a headache.

Generally when creating stereoscopic CGI, you will be in one of two situations: creating content to be mixed with live-action footage or creating pure CG content. Creating pure CG content is the easier of the two as you can keep your virtual cameras parallel to each other making it much easier to adjust the parallax of the resulting images in post and you don't then suffer keystoneing issues. Many artists also export their images wider than needed to give themselves some leeway later. This has the effect of adjusting the scene's convergence point so that if, for example, you are working at 1,080p output, exporting images at 2,000 x 1,080 and cropping in post, you have a bit more room for adjustment.

When mixing CG content with live-action footage it's important your virtual camera rig matches the physical camera rig as closely as possible so you minimise tracking issues. Most live-action productions (including *Avatar*) use converged cameras as they make it much easier to control the zero parallax plane.

Website: www.jigsaw24.com



Parallel cameras introduce no distortion but can be problematic with live action. Converged cameras make the stereo effect easier to control, but can introduce keystone distortion into the image

Production on Avatar

Rob Powers, the first CG artist hired by Lightstorm to work on *Avatar*, talks about the major stages of production



Avatar involved an exhausting combination of live action, performance capture and CG imagery. Using a blend of real and virtual production environments, stereo 3D significantly increased the workflow.

With the bulk of the work produced as pure CG – over 100 minutes – state-of-the-art equipment was a must. At its peak, up to 900 people worked on the film, producing 10TB of data per day! Across the departments artists were using 3ds Max, SketchUp, ZBrush, Maya, Softimage, modo and more. “Honestly, at some point or another, all major applications got some use. In the virtual art department which I organised, we defined the acceptable parameters for the assets early on and based everything on polygonal geometry with UV maps,” Rob Powers, animation technical director and VAD supervisor told **3D Artist**. “This allowed us to focus on adding the best artists to the production rather than the particular software that individuals happened to prefer.”

Avatar went through several major stages of production. In virtual production, all the CG portions were filmed and the virtual sets, characters, props and vehicles were created and used on a virtual capture stage directly with Cameron. The motion-capture was handled using MotionBuilder, the main tool for the stage-based mocap and virtual production capture. “After that, the production shifted to live-action, shot mostly in New Zealand with the human actors and real cameras,” Rob explained. “Particularly challenging were the portions of the film that required real cameras to be combined with the virtually-animated environments and characters through a process called Simulcam.”

Website: www.robpowers.com



© Rob Powers/NewTek

Rob Powers with the team on the set of *Avatar*



preview the work will determine how the images are combined; eg anaglyph, side by side.

3D gets really exciting when virtual and real-world characters and environments combine. This is technically more complex and a much bigger feat in terms of production, but with hardware and software constantly evolving, it will become a more expected workflow in film production in the future. Camera tracking is the process of syncing the movement of CG cameras with live-action video, which gets more difficult with stereoscopic content, as Ben Kitching, 3D and CAD consultant at Jigsaw Systems explains: “Tricks or shortcuts that work in 2D often break the stereo effect or cause visual distortions, demanding a more time-consuming, accurate approach.”

Motion-capture stage environments are typically sterile and technical, lacking the kind of visual feedback you’d expect from real-world location shoots, but *Avatar* has brought about the biggest transformation we’ve seen in CG production through real-time innovations that

allow for greater interactivity. “Ultimately filmmakers excel when they can unlock their creativity through real-time discovery with actors on set,” Rob Powers, animation technical director and VAD supervisor on *Avatar* told **3D Artist**. “It’s like moving out of the Dark Ages into a new era of non-linear immersive collaboration.” Filmmaking can now be as technically deep or as visual and creative as the director requires; the technology is flexible and can be customised to suit.

Stereoscopic support is now offered by most 3D and VFX software packages. If you’re interested in creating your own stereo 3D CGI stereo projects, Jigsaw has a dedicated blog where you’ll find further information on creating stereoscopic images that are comfortable to view, sample videos, 3D clips, as well as a range of demo software; visit <http://stereoville.jigsaw24.com>. The book *3D Movie Making: Stereoscopic Digital Cinema from Script to Screen* by Bernard Mendiburu (published by Focal Press) makes an ideal reference and is good for reading around the topic.



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G H I J
3D Cinderella is a CGI fairytale with a twist in production at Delacave Studio (www.delacave.com), using Maya, Photoshop, Fusion and MachStudio Pro. Preproduction, script, design, storyboard, 3D sets and character models took one year, with work now starting on layout and animation. Mapping is next in October, with compositing scheduled for 2011

with a compositing program without stereo support is likely to double your workload; those that do support stereo effectively allow you to work with two views at once – one for each eye. Nuke has been developed with an elegant workflow for stereo: you can join left and right views with the nodes, keeping everything in one stream while also being able to split them to change parameters to individual views if necessary.

The Foundry's Ocula toolset has also been designed to help deal with common stereo problems. "The biggest two obsessions right now are with camera misalignment and colour differences," Simon Robinson, chief scientist at The Foundry told 3D Artist. "After these two, everything else is fundamental."

When it comes to other software for compositing, there are a few key tools: Fusion, like Nuke, is node-based, whereas After Effects is vastly different. Artists that are familiar with both Nuke and After Effects will probably continue to use both, but the industry tends to adopt one compositing platform for the whole market – the main benefit of which is having a pool of talent all using the same tool for consistency. The Foundry has crossed this hump with Nuke, which has now replaced Shake in the industry. "Nuke has an unexplainable magic," Simon continued. "The market right now is genuinely in love with Nuke: it's well designed and the workflow is just right. It's the ideal compositing technology and is backed by an awesome support team."

The Foundry has a great YouTube channel with basic tutorials to get you started in Nuke, as well as demos and other helpful videos to introduce you to the world of stereo: www.youtube.com/user/TheFoundryChannel. Those more serious about learning new skills for stereo might be interested in fxphd's (www.fxphd.com) professional online training.

“The market now is genuinely in love with Nuke: it's well designed and the workflow is just right. It's the ideal compositing technology...”

Postproduction in stereo

Postproduction in stereo is all about fixing the little things that make it work. Shooting with two cameras will often cause colour mismatches and misalignment, lens reflections and more, and regardless of how much shooting control there has been you will still encounter problems that need to be fixed in post. But once the plates are aligned and cleaned, then it's straightforward compositing from there on.

When people composite stereo work, unusual things can start to happen. Working



Play it back! With stereo, you can't check your work-in-progress too often

3D monitors are a key investment for those dedicated to stereo. But companies are not yet investing in this hardware for every artist, so they need to find other means to check their images.

Anaglyph is still surprisingly popular for reviewing stereo on screen; it doesn't require a special monitor and is, by far, the cheapest option. "Normally we produce an anaglyph version of the scene or sequence we want to discuss with the client," Andreas Burgdorff, founder and owner of unexpected GmbH in Germany said. "They can use red/cyan glasses to get an impression of the stereoscopic effect, though not in its finished form. I think it's a good idea to schedule more time for the approval process to allow additional test screenings with the client."

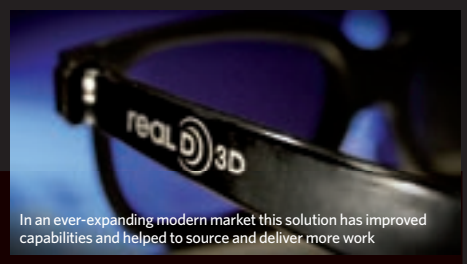
Big studios have their own internally developed setups for this. Framestore in London has its own RealD 3D cinema, as well as a few True3Di monitors. In Paris, Delacave Studio, working exclusively on 3D CGI movies, is equipped with a pool of workstations for stereo 3D, which includes a 120Hz monitor and active shutter glasses, as well as a very large screen for the '3D dailies'.

More studios are finding new solutions for stereoscopic playback. Fugitive Studios is a postproduction company providing a variety of services, including 3D stereoscopic data creation and conversion. Director Stuart Pitcher commented on the company's stereo playback system, bespoke developed by Escape Studios: "The playback system consists of a HP Z400

workstation, modified Boston Igloo storage workstation, 46" 3D display monitor, Iridas DualStream software, Gigabit Ethernet connection. "Clients can now see their project in 3D and approve all aspects before final delivery."

Website: www.fugitivestudios.co.uk

Website: www.escapestudios.co.uk



In an ever-expanding modern market this solution has improved capabilities and helped to source and deliver more work



Compositing on Avatar

Christian Kaestner, compositing supervisor at Framestore, explains the stereo compositing workflow used by Framestore on Cameron's epic

"When it comes to compositing a stereoscopic show, you have to tackle the same tasks as on a regular 2D VFX movie, but also ensure every technique works in stereo. *Avatar* being a full stereo project not only meant we had to deal with twice the amount of data but also threw up some extra challenges.

"The first was accurately tracking the left and right-eye plates. We encountered slight differences in lens distortion and focal length of the zoom lenses that had been used. Since the pace camera rig is shooting through a polarised mirror, we had to match-grade the left and right eye to ensure a consistent result in our composites.

"For most of our paint and roto tasks in stereo, we utilised our accurate camera tracks and Nuke's projection capability to assist any kind of clean-up work. Obviously, this was more effective on hard surface elements than removing a harness going across a moving jacket.

"Framestore established a fully supported Nuke compositing pipeline and all of our compositors quickly adapted to the new software. One of the strengths of Nuke is that it supports stereo compositing. We could achieve

most of our tasks in one stream and only had to break out left and right eye where necessary. Additionally, Nuke's 3D environment and camera support allowed us to place 2D elements in the correct Z-space.

"Last but not least, the final task in stereo compositing was the vertical alignment of the final comp. For a pleasant viewing experience of a 3D movie you want to make sure your plates are only offset horizontally and any mismatch in vertical alignment has to be fixed. Again, we used a toolset from The Foundry called Ocula.

"Not only was *Avatar* a project that was artistically challenging, it also pushed technology to its limits. The sheer amount of render passes we had to deal with in compositing was nothing like we had dealt with before and Nuke's 64-bit technology allowed us to make full use of our eight gigabytes of RAM. Since we couldn't constantly check our work in our downstairs RealD 3D cinema, we acquired a couple of True3Di stereo monitors which our compositors had access to."

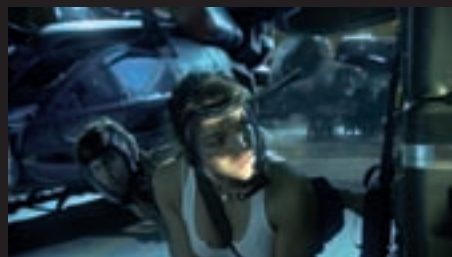
Website: www.framestore-cfc.com



"Hell's gate environment. A shot like this featured three different live-action plates plus hundreds of rendered assets"



"Nuke's 3D environment allowed us to place 2D elements such as light fog and flares in the correct 3D space"



"Hell's gate at night. This shot featured an additional post camera crane move in Nuke to ensure a smooth visual in stereo"

Converting 2D to 3D

Converting 2D to 3D is a frame-by-frame, object-by-object process. When it comes to conversion, in terms of the people and workflow and how everything is put together, artists are using the same tools that already exist – it's quite simply high-quality VFX work, a different way of doing something new.

"There is currently no missing 'killer' tool when it comes to conversion work, it just comes down to the talent of the individual artist and the production workflow," The Foundry's Simon

Robinson explained. "Matte painters already fake backgrounds – conversion is really the same thing."

Converting 2D to 3D involves a huge amount of rotoscoping and painting by hand. Objects are isolated by hand, frame by frame, shifting them left and re-compositing them over the background. The right-eye view then needs the exposed background pixels caused by the move to be replaced through compositing or painting. Any space between the two backgrounds missed by the compositing/painting will cause an unsightly ghosting effect, unpleasant for the viewer and

important to avoid at all costs. The shot then needs to be given its depth, which involves layering and projecting objects onto 3D meshes to give volume to the elements in the scene. Animating the frames is also done by hand, before the depth grading begins, to make sure the depth of the objects in the scene works for stereo. *Digital Compositing for Film and Video* by Steve Wright – now in its third edition from Focal Press – has sections on 3D, stereo and multi-pass CGI compositing, which includes more detailed information on the process of conversion.

The 3D work in *Clash of the Titans* was 'bolted on'. It caused debate when it was released as the first pure 2D-to-3D converted film using View-D, Prime Focus's proprietary system. View-D is said to be the 'secret sauce'; it's a VFX process that layers up source images with various rotoscopes

“There is currently no missing 'killer' tool when it comes to conversion work, it just comes down to the talent of the individual artist”

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Unexpected in Germany understands that the aim of stereo productions is to achieve a well-directed 3D effect



that are placed in depth, based on the director's request for the point of convergence – the power is always with the director! View-D is not 'push-button'; it is a combination of art, technology and software – namely Fusion plus render farms at the time 3D Artist met Martin Hobbs, managing director of View-D in the UK. Interestingly, Prime Focus has since revamped the in-house pipeline with a site licence to Nuke, following its proven track record on a host of recent blockbusters.

In closing...

We've only just scratched the surface of stereo. The debates raised and the tools and techniques involved in stereo 3D are constantly evolving. Besides *Avatar* being the highest grossing film of all time, it was also the most expensive movie ever made. Without doubt, creating a film from scratch in stereo produces the best results. But this is not always possible, due to budget or filming restrictions. If it's done right, however, there is no need for converted 2D footage to give audiences a headache.



Conversion doesn't appear to yet be a replacement for 'true' stereo 3D. But it's still in its infancy and is already a realistic and financial alternative. In the future, it's expected that the two methods will sit together as directors consider the benefits of both – a hybrid approach to creating stereo 3D content.

"If you're a producer or production company and you're on the fence between shooting in stereo or doing a post-conversion, I will always argue to shoot in 3D," Tom Williamson, VFX supervisor at CafeFX for *Alice in Wonderland* commented. "The quality is incomparable; it's simply better and no one can justify conversion for quality's sake. It's always about the money. Shooting stereo slows down a production 20-40 per cent and that translates to cash. Since money drives everything, and not quality (sad, but true), conversion keeps winning."

"I personally hope the movie-going public votes with their wallets and refuses to see converted movies, and the industry doesn't interpret that as a public that doesn't want 3D cinema. We all need to take a united front and say, "Yes, we want 3D movies, but only top quality!"

My eyes! There are some things we all have trouble with visually – even with great stereo vision

Very fast motion, quick cuts between differently graded material, excessive positive or negative parallax, mismatches in colour or brightness – these are just some of the evils that make stereo painful to watch, even for the brightest eyes. Particles, water, fog, gasses and volumetrics are also elements that are difficult to dimensionalise. These kinds of situations will always be difficult to view in stereo, whether a film has been shot that way from the start or converted from 2D to 3D.

Stereo is best when slow paced. Shooting underwater and at super high speed isn't great, and it's here that conversion can step in to reduce production costs, since the results will not – at least not yet – be visually pleasing. On these occasions, shooting in stereo from the outset could be seen as wasted resources when postproduction can produce similar results.

2D-to-3D conversion on Mazda CX7

Andreas Burgdorff, founder of unexpected GmbH reveals how conversion is booming

"At our company, 2D-to-3D conversion is an ever-more popular option for postproduction in stereo. The first step is to analyse the material and select the best method. Next we separate the original 2D footage into different layers (fore-, mid- and background), or we do a 3D rotoscoping, in which the 2D setting is replicated in 3D. The 2D material is then projected onto the animated 3D scene and re-filmed using a virtual stereoscopic camera. Finally, the effect can be adjusted and optimised based on the experience of a first test screening."

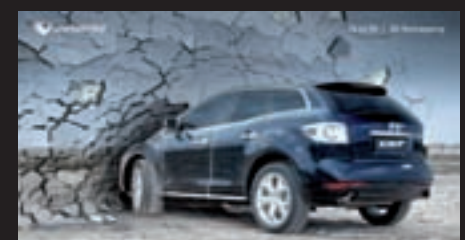
Website: <http://unexpected.de>



Original 2D footage



Depth channel by 3D rotoscoping



3D re-mapping



Stereoscopic output – an anaglyph image, in this case

Step by step

Easy-to-follow guides take you from concept to the final render



Artist info

Antony Ward

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Username: Anchuvi

Personal portfolio site
www.ant-online.co.uk
Country UK

Hardware used
Core 2 Duo 3.16GHz
8GB RAM

Expertise Game artwork,
animation, characters and
vehicle modelling and rigging

Modelling



Software used in this piece

- Silo
- Maya
- Photoshop

Step by step: Create a fantasy warrior woman

Red Sonja 2010

“Red Sonja sought to take an existing 2D character concept and faithfully re-create her in 3D”

Antony Ward specialises in game artwork, especially character and vehicle models

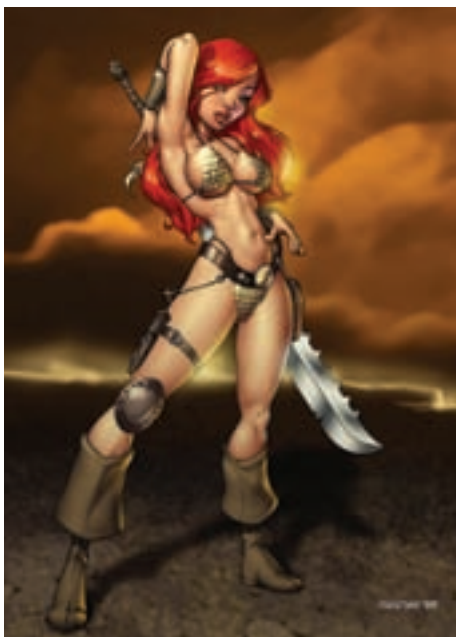
I had created stylised female characters before, but for this image, I wanted to push my skills to another level. Rather than come up with my own design, I chose to re-create an image I had found online by Dominic Marco, a great comic book artist, which meant I could jump right in and start modelling.

This time I wanted to attempt everything from scratch: clothing, weapons, rendering as well as the environment for her to stand in. I also decided to document it so I could refer to the process on future projects. It's this particular workflow which I will share in this tutorial – how I turned a 2D Red Sonja into her 3D counterpart.

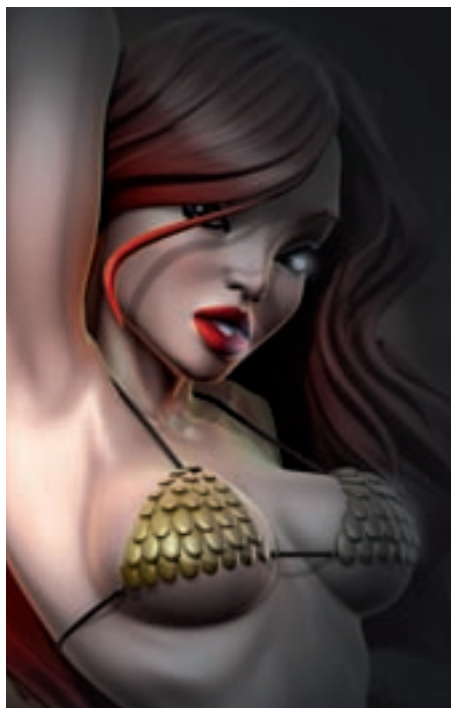


Fantasy inspirations

Formulating the concept



01 From the outset I knew I only needed to focus on a posed model, which meant I didn't need to worry about creating her in the standard Michelangelo pose as I usually would, and then rig, re-pose and adjust her later. My inspiration was Dominic Marco's Red Sonja character (seen above). He is an incredible artist, and you can see more of his work at www.dominicmarco.com



02 Deciding to model her posed had some great advantages and meant I could get areas like her right arm, which is raised and bent around to her back, looking just right. It also meant I didn't need to worry about creating anything behind her.



03 With this project I also wanted to experiment with Maya's shaders, I was aiming to achieve a look which wasn't too realistic and retained some of the original comic book charm.

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Artist Showcase

Antony Ward

I've been working in the games industry for close to 16 years now and have been freelance for the last three. During that time, I have worked for some of the biggest companies in the field and have experienced nearly all areas of game development, with character modelling, animation, MEL scripting and rigging being my favoured areas of design.



Flight of the Raven Silo, Maya, Photoshop (2010)

Jade Raven was created as part of a tutorial within my latest instructional book on how to use Silo, demonstrating just how versatile the program is. She also features in issue 18 of 3D Artist



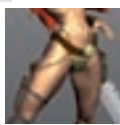
Toy Story Racing Car Silo, Maya, Photoshop (2009)

This vehicle was a personal piece of work, which I created to brush up on my game artwork skills. I built a hi-res version of the car, then reduced it to around 10,000 polygons and made it 'game ready'



Stylised Female Silo, Maya, Photoshop (2007)

This was my first 'pin-up'-style character. She started out as a basic model, which evolved as I worked on her and gradually became more and more detailed. I was so happy with the model that I ended up rendering her and, afterwards, painting her hair in Photoshop



Modelling the figure

Fleshing out the posed model

04 Rather than build Red Sonja from scratch, I decided to take a shortcut and start with a previously made model. Importing this into Silo, I then began to block out the main pose. At this stage, I wasn't worrying too much about the overall shape and form as that would be dealt with later.



06 Once I was happy to move on, I began to build her boots. As we could no longer see her feet, I deleted these and then continued to refine the pose and add further muscle definition to her body.



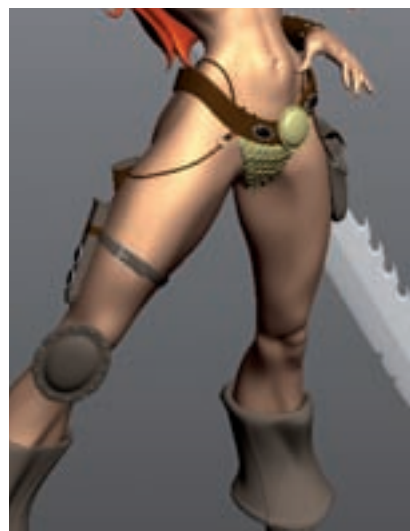
08 To complete the main model of the character, all I had to do was add the rest of her clothing, accessories and, of course, her sword.



05 With the pose blocked out, the next job was to go in and clean up the nasty twists and pinches inadvertently created as I adjusted her shape. This also gave me the opportunity to work some finer details into her torso and armpit.



07 One major part of the concept was her hair. Rather than rely on simulated hair, I chose to model it, allowing me to achieve its dynamic pose and also keep the look consistent with the comic-book style.





Refining the concept

Bringing the scene to life

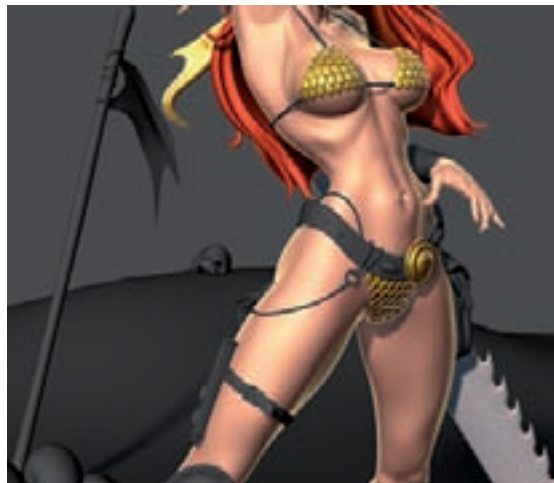
09 Now I had Red Sonja completed, it was time to consider the background. I wanted her to look battle ready, so decided to place her on a battlefield. To increase the visual impact and develop a sense of story I surrounded her by skulls which had been gathered in the aftermath.



11 With the camera and lighting in place, I could begin working on my render layers, which could be combined and then tweaked in Photoshop for final touches. My first pass was an Ambient Occlusion layer which I used to add an overall sense of depth to the scene.



10 With all the models created, it was time to export them out of Silo and take them into Maya where I could carefully construct the battlefield scene. At this stage, I also began to experiment with the lighting and the shadows.



12 All I needed to do now was work on the colours and shaders, making sure I implemented some subtle rim lighting to help enhance the hidden details.



8 hours
render time
Resolution:
2,480 x 3,508

Materials

As this image was based on a comic-book style concept, I wanted to retain some of that feeling, and not make the materials, or the lighting overly realistic. A cartoon shader would be too harsh for this image, plus most of the model detail would be lost in the render process, so I decided to try a basic material, and use a rim shader to enhance the edges.

The rim shader was created in Maya by connecting a Ramp Texture node to the Incandescence channel of my material. So that this would only affect the outer rim of the model, I then created a Surface Sampler node and connected the Facing Ratio attribute to the ramp's vCoord attribute. The lowest colour on the ramp would then become the colour of the outer rim of the models, where black would render as transparent.

Because I was relying on a combination of basic colours and the rim lighting, I didn't worry about UV mapping. As the image was to be rendered, I also knew I could add in any surface details in postproduction.

13 Once I was satisfied with the lighting and shaders, I rendered out different layers, separating each element so I could work on them independently in Photoshop. I then played around with the overall look of the scene until I was happy.

Step by step: Creating a lush fantasy jungle

A Journey to Pandora 2010

James Cameron's multi award-winning *Avatar* has become one of the most groundbreaking movies in both the traditional and CG film industries alike. As a result, it has inspired many digital artists to create rich fantasy jungles, including me. I have seen the movie several times now, yet every time I watch it I notice something new in its magical environment, which inspires me to experiment in Vue to create different jungle scenes of my own.

In this tutorial I will show you how I made my latest scene inspired by the movie. After a brief inspection of two of my previous *Avatar*-inspired renders, you can follow my full workflow, from honing the water settings to the final post-work of enhancing the jungle mist effect. I will describe how I made the mighty cliffs, the riverside terrains and their EcoSystem and I will show you how to add a waterfall in Vue using Alpha planes. In addition to a short overview of rendering issues, I will reveal how I created the floating mountains and Pandora's evocative misty atmosphere.

Problems and solutions

Terrains and rock formations play a big role in the world of Pandora. In the jungle you can find several cliffs with steep slopes and interesting rock formations covered in rich, dense vegetation. For this scene I used three types of terrains; heightfield terrains for the cliffs, baked MetaBlobs with Displacement for the huge rock formations and the floating mountains were made with a similar technique. These variations enabled me to build a rich, complex environment.

When making a scene full of rocks and cliffs, we can't forget about proper materials and EcoSystem manipulation. There are countless rock materials available for Vue and, with some

acquired skills and patience, you can even create your own in the Function Editor, but choosing the right material is not enough to make your terrain look great. Setting the right scale is one of the key aspects. With these large terrains I had to experiment a lot until I found a relatively increased scale value that made the terrains look less 'blobby'.

The EcoSystem manipulation was a bit easier; since this is not a ground view, I didn't need to pay attention to very small details. To make your landscape look lush and realistic even from above, multilayered EcoSystem with various levels of density and environment settings can make all the difference.

Step by step

Easy-to-follow guides take you from concept to the final render

Artist info



Drea Horvath

3DArtistonline
Username: Drea

Personal portfolio site
www.dreahorvath.com

Country Hungary

Hardware used

Intel Core 2 Quad Q9650
8GB DDR2 Dual Channel

Expertise Drea's passion is large-scale, detailed naturalistic landscapes using e-on software's Vue. She specialises in creating realistic atmospheres and lighting.

Software used in this piece

Vue 8.5
Infinite

Photoshop
CS5

“The lush fantasy world of *Avatar*'s Pandora has inspired me to create my own fantasy jungle... from honing the water settings to the final post-work of enhancing the jungle mist effect”

Drea Horvath A Journey to Pandora



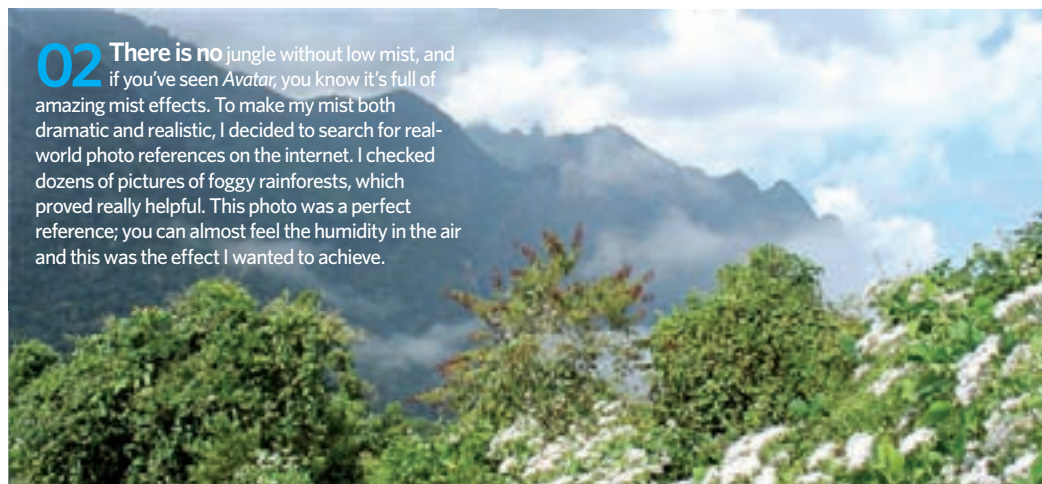
Design inspirations

Building up a fantasy jungle concept



01 A fantasy jungle like Pandora's rainforest has three essential elements: high cliffs with lush tropical vegetation, low jungle mist and giant floating mountains. As I've mentioned, I've made some jungle scenes based on Pandora before, but none of them contain all three elements. This time I wanted to make a more complex scene with everything included, so I picked two of my previous renders – *Mysteries of Another World* with its cliffs and *Land of the Na'vi* with its floating mountains as basic concepts and decided to mix the elements of the two to generate a brand new scene.

02 There is no jungle without low mist, and if you've seen *Avatar*, you know it's full of amazing mist effects. To make my mist both dramatic and realistic, I decided to search for real-world photo references on the internet. I checked dozens of pictures of foggy rainforests, which proved really helpful. This photo was a perfect reference; you can almost feel the humidity in the air and this was the effect I wanted to achieve.



03 Pandora's majestic floating Hallelujah Mountains make the movie unique and memorable. I could really feel that amazement our heroes felt when the floating mountains appeared in the fog, and I will always remember the line, "You should see your faces." Achieving the same impact is a challenging task, but my goal was to re-create this feeling as closely as possible.

Artist Showcase

Drea Horvath

I am a self-trained digital landscape artist from Budapest, Hungary. I became addicted to 3D landscaping about two and a half years ago when I was browsing wallpapers for my desktop and came across some nice renders. I enjoy experimenting with different scenes, but my favourite style is large-scale, complex environments with dramatic atmospheres.



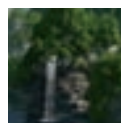
Silent Solitude Vue 8.5 Infinite, Photoshop CS5 (2010)

Silent Solitude depicts a peaceful natural environment where tired hikers can get some rest and a nice view after walking long miles in the mountains



More Dreams May Come Vue 8.5 Infinite, Photoshop CS5 (2010)

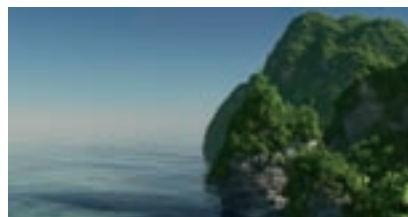
This scene was inspired by one of the amazing surreal paintings in the movie *What Dreams May Come*. I was impressed by the colours and the rock formations



Assembling the scene

Creating a lush jungle EcoSystem

04 After setting the camera to a height of 84m, I added Shrektite material from QuadSpinner's Mineral Infinity to the ground, and made the water more reflective by setting Turn reflective with angle, Highlight global size and Highlight global intensity to 75%. After that I placed the rocks and cliffs to the right with QuadSpinner's new Rock X material.



05 On the heightfield cliffs I used a single layer of Alder - late spring trees. I set the Density and the Slope influence to 90%, and the Direction from Surface to 85% Perpendicular. To the rocks I added another less dense layer of a vertically growing tree from AsileFX's jungle pack, and on the lower parts I used a third layer of coconut trees.

06 A waterfall is another must-have in a scene inspired by Pandora. For this I created an Alpha plane (making sure that the basic material is set to Flat black), loaded the same waterfall picture as a Color and Alpha picture, then inverted the latter. In the Material Editor's Effects tab, I set Luminous lighting to 84% and all the other Lighting settings to zero.



07 To add more details to the scene, I decided to create a small river that connects the foreground and background water. I shaped the river by turning the ground to an EcoSystem and painting larger rocks onto it with the EcoSystem painter. After that I placed some smaller terrains to the riverside, once again applied with Rock X material.

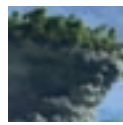


08 The EcoSystem on the riverside terrains has two layers; a dense layer (90%) of Alders and less dense layer (75%) of the same tropical trees I used for the rocks on the right. To enhance the tropical feeling, I added Date palms to the second layer. After that I filled the gaps with the same trees using the Global EcoSystem painter, and added some more gnarly trees manually.

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15 hours
render time
Resolution:
3,000 x 1,687

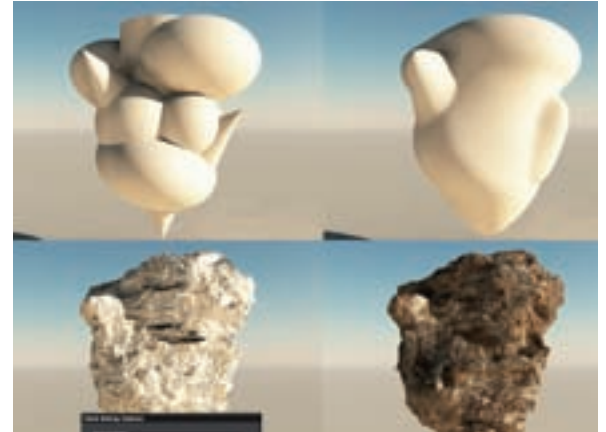


The floating mountains

From primitives to complex rock formations



09 To increase the complexity of my world, I added a few lower terrains and some giant displaced MetaBlobs – so-called HyperTerrains – with different shapes and sizes to the background. I applied the same materials and EcoSystems on them as on the foreground rocks and riverside terrains. I was now ready to add the floating mountains.



10 The rock formations and the floating mountains you can see in this scene are made using QuadSpinner's HyperTerrain technique. The basic process is simple; I loaded some primitives into the scene, made a MetaBlob of them, added the Complex sedimentary rock bump function, enabled Displacement mapping, and baked the displaced MetaBlob to polygons. After that I added QuadSpinner's Rock X material and adjusted the Scale to 3.



11 The EcoSystem on the floating mountains is similar to the rocks' EcoSystem on the ground; a dense layer of Alder, plus the Slope influence set to 95%. For the roots on the bottom I added another layer, loaded Dry weed and an AsileFX bottom root and painted them to the lower and hanging areas.



12 The humid jungle and the floating mountains of Pandora just wouldn't be the same without lots of thick fog around. For the mist I used Thick Strato-Cumulus layer from the Spectral 2 pack. I set the Altitude to 0mm, the Height to 345mm, decreased the Cover to 42% and the Density to 28%. On the screenshot you can see my precise cloud and atmosphere settings.

Let there be light

Even though Pandora is a fantasy world, it has incredible realism; the viewer can really forget that the rest of the movie was done with CG software.

Besides realistic materials, the key to realism is lighting and atmosphere. In Vue, just like in real life, sunlight is the only exterior light source, but the Global radiosity lighting model, its Gain, Indirect skylighting and Sky dome lighting gain (SDLG) means this illumination is enough. Although in such a complex piece, it was hard to find the perfect settings, it's not impossible. With an increased value and proper balance of Gain and SDLG there's no need for extra light sources.



13 As a final step, I added some random tropical plants to the foreground, and to imitate the Ikran I added some pterodactyls from the Vue Extras CD near the floating mountains. After these steps I rendered the scene at Broadcast quality. In Photoshop I made some colour, contrast and level corrections, added vapour to the waterfall and enhanced the jungle mist effect with some smoke brushes.

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I made this...

Incredible 3D artists take us behind their artwork

Artist info



Olivier Vernay-Kim

Website <http://oli.vernay.free.fr>

Country United States

Software used 3ds Max, mental ray, Terragen 2, Photoshop

Heading South 2010

This image was originally an environment I created for a *Fable 2* cinematic shot, based on concept art by Chuck Wojtkiewicz. I really liked the image and later decided to push it a little bit further by adding a few more details and greater atmosphere.

“Once I got a good first pass, at about the middle stage of the process, I rendered the whole image in one chunk and then kept updating the scene doing only region renders. I also rendered a distant fog pass, which I used in Photoshop as a mask with a blurred version of the sky to match its colours”

Software used in this piece

3ds Max

mental ray

Terragen 2

Photoshop

“ Lighting is a single mental ray Sun and a plain blue Skylight. I did some test renders with HDRI maps, but I wasn't really satisfied with the results ”

“ I used different techniques to model the snow. Displacement was used for the ground, rocks and fence, while BlobMesh was more appropriate for the small vegetation. The pine trees on the left were a blend of BlobMesh, Opacity maps and baked top light used as a mask in the leaf material ”

Creating a savage warrior

Warrior 2010

“How to create a warrior from a distant land with realistically exaggerated forms and brutal weapons, inspired by the style of Frank Frazetta”

John Hayes is a videogame character artist

Often the best looking characters comprise not only good modelling, but also sound textures and rendering.

Indeed, the final step can be the most critical, though it depends upon a strong base model.

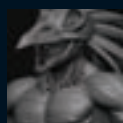
We will start with the concept and reference image collage to help create the personality, anatomy and costume detail. Concept art is often only used for the inspirational direction of the character, but it's helpful to have lots of photo references. A good place to find additional

free stock reference images is www.deviantart.com. Be sure to get a few anatomy photos as they'll help make the character more convincing.

The process I will be using is called 'box modelling', which allows for the overall form of the character to be rapidly created and then refined by several additional passes. Each subsequent pass will develop the overall volume and add detail where it is needed. At the same time, I will add polygons and edge loops for an even quad polygon distribution (except for the

face and hands, which will consist of a greater amount of polygons).

I will be using modo for much of the tutorial since I find its integrated modelling, sculpting and UV layout tools essential in speeding up the process. Finally I will use ZBrush to create the high-resolution detail model that will be used as a source for rendered textures. Part two of this guide will focus on creating textures and posing the model in Maya and modo and will finish with lighting and rendering in modo.



The base shape

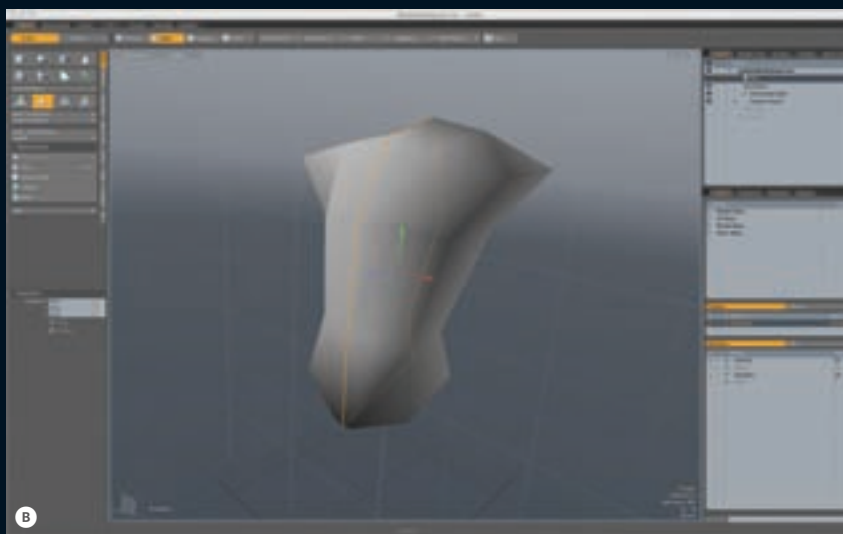
Creating the basic torso



01 The base shape

The character should face along the positive Z with the head in the positive Y direction. Start with a basic cube wider at the top than the bottom. It should be three polygon rows wide and three rows high. The middle row should be central to the X axis. This will form the basic torso **A**.

A The side profile should suggest the waist and the side vertical cube rows are thinner in the middle



02 Tackle the torso

Adjust the side poly of the top row; where the arm comes out should be roughly square. The leg polygons at the bottom should also be roughly square with a smaller gap for the crotch. The arm and leg base polygons should be angled outward between 20-45 degrees **B**.

On the Disc

The final non-posed modo character model and the final ZBrush ZTool.

Stock images used for reference and textures:

For the body skin texture:
<http://senshistock.deviantart.com/journal/12576734/>
 For Anatomy Reference Photos:
<http://mjrnum-stock.deviantart.com/>
 and <http://vishstudio.deviantart.com>

behind the scenes

3D artists explain the techniques behind their amazing artwork

Artist info



John Hayes

3DArtistonline

Username: John-Hayes

Personal portfolio site
<http://john-hayes.cgghub.com>

Country USA

Software used
 modo 401, ZBrush 3

Expertise Videogame
 character artist

Software used in this piece

modo

Maya

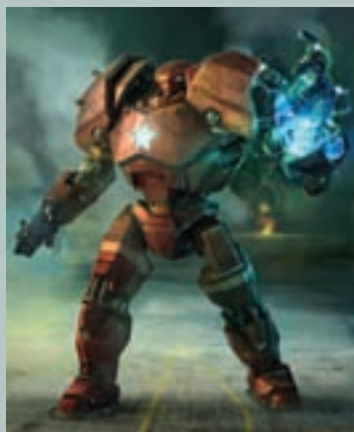
ZBrush

Photoshop

Artist Showcase

John Hayes

I am a videogame character artist working in PlayStation 3 and Xbox 360 development. My background includes working at Capcom, Sanzaru Games, SEGA and Factor 5, where I have created characters for *Iron Man*, *Golden Axe*, *Final Fight*, *Maximo*, among others. Working on console games is exciting as I always learn new techniques and skills.



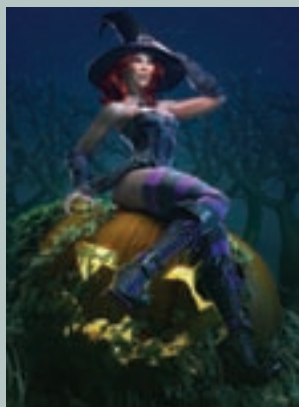
Crimson Dynamo modo, Photoshop (2010)

The Crimson Dynamo boss that appears in the *Iron Man 2* videogame, developed at SEGA for the PS3 and Xbox 360. The model has fully articulated weapons and tesla coil system, a complete cockpit interior and swappable armour plates. All modelling, UV layout, textures and rendering done in modo.



The Twins Maya, modo, ZBrush, Mudbox, XSI (2008)

The Twins boss characters I created for SEGA's *Golden Axe*. The characters were modelled in Maya, hi-res sculpt created in ZBrush, Normal maps created in Mudbox, Ambient Occlusion in XSI, textures edited in Photoshop and modo used for UV unwrapping, texture clean-up and rendering. The character is roughly 15,000 polygons with three 2,048 x 2,048 map sets.



Halloween Witch modo, Photoshop (2009)

I made this character using modo's modelling, sculpting, UV layout, 3D texture painting and rendering tools. Photoshop was used to clean up the renders, adjust the colour values and add highlights. I normally use several different 3D software packages in order complete a character, however since modo offered all the tools I needed, I used this as an opportunity to learn more about the program.

03 Create the limbs

With Symmetry X active, bevel out the arms and legs and scale the end polygons so that they taper. The arms should be made at about 45 degrees and the legs made to run straight down from the hips. Bevel out the top two middle polygons for forming the head. Using the Loop Slice tool, split each limb approximately in half and adjust to form knees, elbows and a rounder head shape **C**.



C Use Loop Slice and Bevel tools to add more poly edges to the silhouettes

D Once the bevels are adjusted, add edges at the foot bridge and heel, as well as the finger joints

E The shoulder edges flow like a 'cape' from the bottom of the pectorals and then over the shoulders



04 Add in the feet and hands

Make the wrist and ankle polygons slightly longer along the Z axis. Bevel the hand out to the fingertips, add two loop splits and bevel out a thumb at the side polygon twice. For the foot, bevel to the bottom of the heel and bevel out to the tips of the toes **D**.

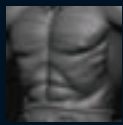


05 Round out the form

Bevel the front polygons to form the face. Create a loop slice along the front arm that should flow along the pectorals and finger edges. Add another loop slice along the front leg, with the flow going around the back of the leg, over the shoulder and across the face. Add more edges around the shoulders so they form polygon loops. Repeat for the hips **E**.

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Body details

Honing the body features

06 Define the face structure

Add another loop to the head on either side of the centre line; this should give you four vertical poly rows on which to add facial details with four horizontal rows. Select two where the eyes should be and bevel inward. Next split the eye horizontally so each eye socket is four quad polygons and the edges help to form the bridge of the nose. For the mouth, bevel the centre two poly edges and the resulting polygons inward to form a poly loop **F**.



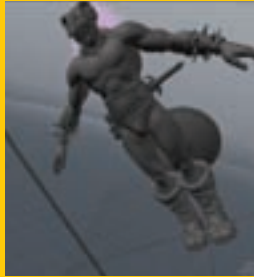
07 Add more facial edge loops

Add edge loops around the mouth so they flow under the lip and over the bridge of the nose. Bevel the eyes in a few more times and build the edge loops so they form a 'mask' that connects both eyes. Once the loops are complete, you can add further edges for the smaller details such as nostrils and tear ducts **G**.



Action Center

Using the Action Center is an important part of modelling in modo. I prefer to use the Action Center set to Selection as the axis will often automatically align to an angle for the most accurate edits. Sometimes Selection does not meet my needs, so instead I align the work plane to Selection and then use the Action Center set to Automatic. Although the work plane will align to most selections, I get the best results by selecting the vertexes. The setting I use most often is Local to help me edit several separate elements simultaneously.



F Bevelled base edge loop structure for eyes and mouth. The side of the head also has a bevel for the ears

G The ears and nose tip are bevelled out. To add nostrils, bevel the edge on each side of the nose

H Select a top and bottom and top edge on each fingertip side and use the Bridge tool to fill in. Fill the base between each finger by double-clicking the edge and using the 'P' key

I Make the knee and elbow bumps by bevelling out. Edge loops in these areas are important for good deformation of joints



08 Model the fingers

To quickly create the fingers, add two edges to create four polygon rows, one for each finger up to where the base of each would be. Then make sure there are two edge loops for each knuckle row and for the bottom of each finger. When complete, select only the three edges between each finger polygon row and bevel the edge and delete the thin middle polygon; do not delete the end triangles **H**.

09 Smooth the shape

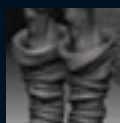
Add several more edge loops to create an even distribution of polygons over the whole body. Continue to add edges to minimise any angles as seen in the silhouette. At the same time, keep areas that are bony or close to a fold that is sharp and defined **I**.





Half the work

Make sure to use the Symmetry function as much as possible to cut your workload in half. Always have a centre polygon edge. If you find that it is not working properly, you can either delete half and use Duplicate/Mirror or use the Geometry/Symmetry tool to get it working again.



Adding costume details

The Frazetta style

10 Exaggerate the muscles

The Frazetta-like design influence I am attempting has exaggerated shoulders, rounded muscles and narrow joints. The deltoid muscle is larger than others, including the pectorals, giving the body a nice taper. The back latissimus and trapezius are large too. Adding crude costume detail and brutal weapons helps to complete the look **J**



J Using the sculpting tools beyond Vertex, Edge and Face Selection really helps to create organic forms

K Once in place, edit the face geometry to make sure the eye spheres look natural with their poles near the centre of each opening

L The feathers are made at the origin from a flat oval shape, with 35 instances as positions out the back

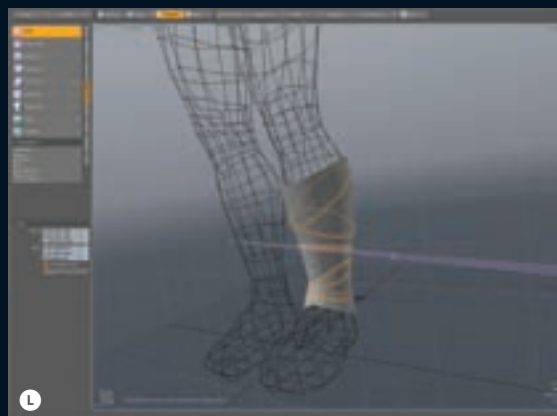
M The Slice tool is used to cut the boot where straps would be on the wrapped leather. The edges are bevelled for thickness and finally the leather in between is bevelled out to folds

N The shield is made from a sphere end pole and a few poly rows, which have been flattened slightly. Detail is added afterwards



11 Eyes and hair

The eyes are spheres, with their poles along the Z axis. A ponytail is a short bevel from the back of the head, the bevelled faces shaped into a circle, then bevelled straight back a few feet. The length is then loop split so that the polygons do not become long rectangles **K**



12 Create the headdress

The bird skull originates from a cube, with two segments on the X axis, that's subdivided once. Next two lower front faces are bevelled out for the beak, then the side face bevelled inward for the eye sockets. Finally the edges at the bottom, beak base and eyeholes are slightly bevelled before being subdivided again and finer details applied **L**



13 Fitted details

The quickest way to add details such as belts, straps, boots, etc, is to either duplicate the base geometry and scale it out and modify, or just build an edge that defines the details. The final step is to remove any geometry not seen (eg feet) and to merge all the elements **M**

14 Weapons and small details

Additional belts and a necklace are added, first by duplicating a polygon loop from the area, editing and finally using Thicken Polygon to create some volume. Necklace claws, armband spikes and a round belt buckle are added to the model. I also included several smaller buckles and detail shapes to the belt. This is a chance for you to get creative **N**



Preparing for UV mapping

Mesh subdivision and UV layout

15 Break down the details

Edges are bevelled on the cuff and belt. An extra row is added to the spike and claw tips to keep them sharp, as well as the various costume details. After defining the edges, each part is subdivided. The subdivision method Smooth with default settings is used on the body to keep the muscle planes relatively defined. For the other parts, SDS Subdivide is used **O**.



Frazetta finish

To create a Frazetta-style warrior, there needs to be an exaggeration in the muscles that includes large shoulders, hands and feet. Additionally a costume should have several layers of detail, such as weapons, a fearsome mask, belts, trophies and, finally, some equipment pouches. During the process to create this warrior, it was important to make sure the early stages of the model were well constructed and clean since all the other steps are built upon them. Good polygon placement and edge loops help when adding finer details, sculpting and posing and will speed up the process.



16 Sculpting and clean-up

Using modo's mesh sculpting tools, I add muscle and detail definition, as well as wrinkles and folds on the loincloth, leather belts and boots. The purpose of the pass is to sharpen detail as well as cleaning up the edge geometry that might have clashing polygons or weird polygonal shapes. All the metal items such as weapons and buckles are left smooth **P**.

O The body geometry under the belts, cuffs and boots is removed and the open edges merged

P After using the Inflate tool, I use the Tangent Pinch tool to define the muscle

O I use the Unwrap tool mostly set to Group Normal, followed by the UV Relax tool set to Adaptive

R Scale the UVs evenly with the Action Center set to Local, Axis Auto

S The focal areas of the head and hand UV shells are scaled up slightly to give them a better pixel ratio

17 Use UV Unwrap

To get clean UVs, any existing UV map textures are deleted. The body geometry is then broken up into separate sections for unwrapping at the joins of different materials or sections, such as the cuff and loincloth leg seam. The edge for UV borders is placed in the least visible area (usually at the back or other hidden spots). Since the feathers are all instances, only the main source feather needs to be unwrapped **O**.



18 UV Peeler

For long, tube-like objects I prefer to use the UV Peeler. The arm cuffs, belts and ropes are all 'peeled' and then their UVs made flat along the U and/or V axis. The UVs are then re-packed onto a map to use the pixel space more efficiently **R**.



19 Pack the UVs

After all the UVs are unwrapped, objects that reuse the same UV space are hidden. Next, a simple chequer texture is applied and I run Pack UVs. UVs are placed from largest to smallest and evenly flat UVs are placed next to each other. I keep some space between each shell to account for any pixel bleed **S**.



Sculpting in ZBrush

Creating a 'ripped' body

20 ZBrush setup

For export into ZBrush, all parts are centred on the Z axis, combined into one mesh layer and its UVs are in 0-1 space. The model is saved as an OBJ and imported into ZBrush. Before any sculpting, I organise the parts into separate SubTools, give them Morph targets and ensure any open edges are creased. I also organise the SubTool list with names and objects sorted according to their position in space, top to bottom **T**.



22 Sculpt muscles

Using the Standard brush with Z Intensity set to 10 and Focal Shift to -100, do an overall first pass over the body. I only use the Smooth brush to even out the surface, keeping the stroke edges and bump that lend to an overall fleshy feel. Keeping the brush stroke defined helps to provide the 'muscle fibre' look **V**.



T I prefer to sculpt using the MatCap Gray material for its wide specular range and the fact it's not translucent, so details and flaws are visible

U Using the Slash3 brush in reverse helps to add raised details to the flesh

V Using the Move tool, I adjust the muscle shape and flow

W After overall sculpting I find using Alpha masks a very quick method for adding in wrinkles and folds

X Hands can be tricky to get right. Work from the main joints out to the fingertips



21 Overall body patterns

I like to map out the muscle patterns, bumps and fibres to build upon. Using the Slash3 brush set to an intensity of about -30, I start by tracing out the edges and creases for muscles and tendons, etc. When the first pass is done, I like to use the Slash2 and Slash1 brushes to add finer details and bumps **U**.



23 Head detail

For face detailing I like to have some photo references handy to help with the smaller, more subtle features. I try to get the eye area correct, then move on to the mouth. Lastly I work in the ear detail to complete the head **W**.



Top tips

To get much better results, faster, I use the Alpha palette and masks as I work. Alpha is great for hiding parts I'm not working on and helps to speed up my workflow, as well as improve general application responsiveness as I add subdivision layers to the SubTool. I find that using masks helps me to quickly add folds and overlapping detail just as in real sculpting. Pushing and moving the shape together helps to get a good flow in the model's form.



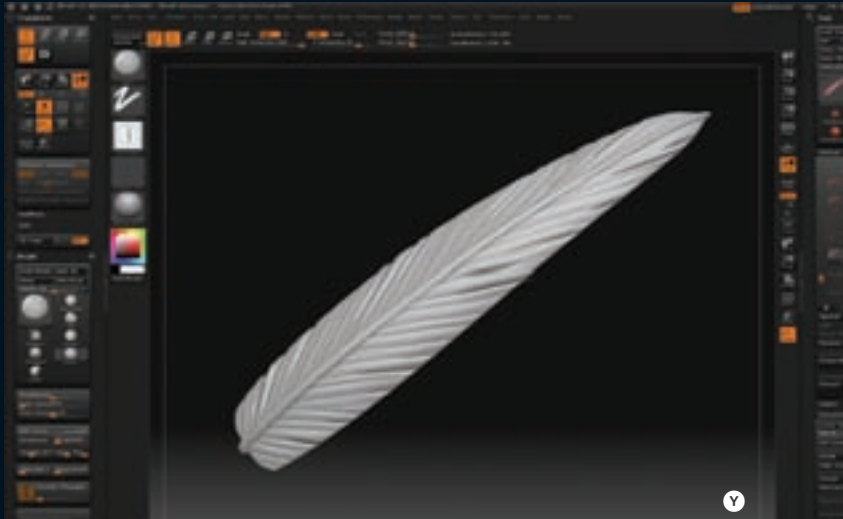
24 Hands

Hands tend to be somewhat bony, so I start with defining the major joints on the fingers and the tendons on the back of the hand. Generally it's good practice to get the knuckles looking correct and then the area around the thumb base. The last step is usually defining the fingertips **X**.



Detailing the costume

Adding surface properties and clutter



25 Hair and feathers

For the ponytail, I first mask off the hair tie-downs and then use the Standard brush with Alpha 54 and brush along the length. After, I invert the mask and inflate the tie-downs. The feathers are treated in much the same way. Since all the feathers will use the same UVs and textures, we only need to sculpt one and duplicate **Y**.

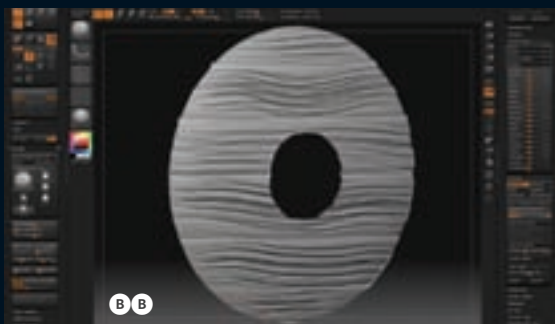


27 Leather and boot detailing

For most wrinkles, I like to use Alpha 54 with the Standard brush. The first pass is to create the major wrinkles and the other passes are very light to smooth and blend. Finally, using Alpha 59 with the Brush Tip set to DragRect, I add a slightly cracked leathery surface **A A**.

28 Shield and weapons

For the weapons, I need to make the surface look like metal or wood. For wood I use Alpha 58 to help create the wooden grain and planks. The metal needs to feel like crude, beaten iron, so I use the tortoiseshell-like Alpha 25 with the Brush Tip set to DragRect. To create a beaten look, I mask off any non-metal areas and work from large to small **B B**.



Y Sculpt the feathers using Alpha 54 for a subtle bump and then use the Slash brush to break up the edges

Z I use the Slash brush to quickly incorporate cracks and knit marks

A A The Slash2 brush is used to break up the leather to simulate patches

B B I made a mask using Alpha 58, inverted it and brushed over to create a wooden plank effect

C C Draw simple scrollwork onto the surface, invert and then inflate



26 Headdress

As with the body, I do an overall pass on the headdress to rough out the shapes. When complete, I start to add bone-like details. The skull should look old and worn, so using the Spray stroke with a Standard brush, I add a Bump texture to recessed areas and keep raised areas more smooth. Next, to add a more fibrous look to the bone, I use Alpha 54 to quickly brush in ridges and recesses **Z**.

NEXT ISSUE

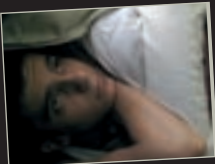
Next issue I will demonstrate how to use the hi-res model to render out Normal and AO maps to use as a base for Diffuse and Specular textures. I will import the model into Maya for some quick rigging and posing and back into modo for tweaks and final scene setup. Lastly, I will use the textures combined with advanced shaders to render out the image in a dramatic environment to complete this magnificent warrior.



29 Final details: war wounds, weathering and battle damage

Using the Slash1 brush, I add several scars and cuts to the body and the equipment. To add smaller details such as extra bits of wrapping, I mask off the desired location, invert and use the Brush tool with Alpha 45 to quickly add depth. When complete, I invert the selection and use the Move brush to tuck in and tidy the edges **C C**.

I made this...
Incredible 3D artists take
us behind their artwork



Artist info

Nikita Veprilkov
Website www.veprilkov.deviantart.com
Country Ukraine
Software used 3ds Max, ZBrush, Photoshop

Insomnia 2010

One evening I was waiting for my good friend from a trip. It was dark and a little cold; the air was fresh. Looking up at the nearest house, I saw the moon showing from behind the house. One of the windows glowed with a warm light and I thought it looked really attractive. At that moment the idea for this picture came to me...



“When Displacement can't give me the results I want, I use ZBrush – even for non-organic objects. It takes much longer, but gives you full freedom. I used it in this work for the balconies”

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“The volume light and depth I rendered in separate passes. This gives much more control over the haze and air; it allows you to make changes on the fly”

“To render depth, you need to add it on the Render Elements sheet. To create volume light you need to adjust light sources and volume light settings and then apply a black material for all objects in the scene before you render. The received image is worked on in Photoshop in Screen mode”

“To reduce render time and have more control, I rendered the interior and exterior as separate scenes. Later, I composed them in Photoshop. This step also facilitated the lighting adjustment. Every scene has its own light sources and GI settings”



I made this... Nikita Veprikov ● **The studio**

Software used in this piece

3ds Max

Photoshop

ZBrush



Modelling,
Texturing

Want more help with Photoshop?

This tutorial was taken from **Advanced Photoshop** magazine, which is a great resource for anyone wanting to brush up on their Photoshop skills. Each issue's packed with advice for using the tools for creative effects. Find out more by visiting www.imagineshop.co.uk

Software used in this piece

Terragen

Photoshop

Step by step: Use 3D and Photoshop

Artificial 2005

“ Learn how to use Terragen and Photoshop to create stunning futuristic space scenes ”

Christian Hecker specialises in landscapes/terrains

The picture used in this tutorial was created in 2005 and marked a personal milestone in how I perceived what I was able to do with Photoshop.

Terragen is the 3D software used here to create a plate picture for Photoshop. It's a great beginners' tool for people who love wide, open landscapes and want to head into a basic 3D direction. Additionally, Terragen isn't too complex for a piece of 3D software, so it doesn't require an exceptional level of 3D knowledge.

In Photoshop, the real fun begins. I will walk you through how I added specific textures to the scene and brought the boring-looking renders to life. You will see how I copied and modified a lot of things that I created within the picture, and will also see how much fun blending modes can be. The Photoshop work can practically all be done with the mouse, therefore techniques may differ from most usual procedures. But even if it requires more layers and better structuring, it all can be done without an expensive graphics tablet. To begin, you will need to download and install Terragen.

About Terragen

I used Terragen 1 for this tutorial. As the development for Terragen 1 stopped because it concentrated on Terragen 2, the version of Terragen that I used isn't really up to date any more. For example, it doesn't have multicore support, so render times could take a while under certain circumstances. Nonetheless, I can recommend it to all beginners since I know quite a few high-class artists who started out with Terragen. It's much cheaper than other software and, with a little creativity, can still be used to create some stunning landscapes. You can download Terragen 1 (now called Terragen Classic) for free at www.planetside.co.uk. From there, you are also able to download the feature-limited free version of Terragen 2.

Step by step

Easy-to-follow guides take you from concept to the final render

Artist info



Christian Hecker

Personal portfolio site
www.tigaer-design.com

Country Germany

Hardware used
Terragen, Photoshop

Expertise For the past few years, Christian has focused on creating environmental concept art. Everything learnt in an autodidactic way, he now uses his own techniques to create everything from book covers to games and movies.



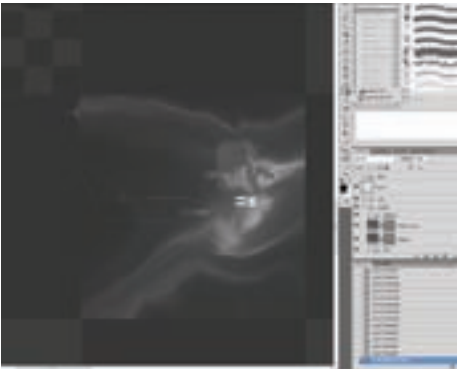
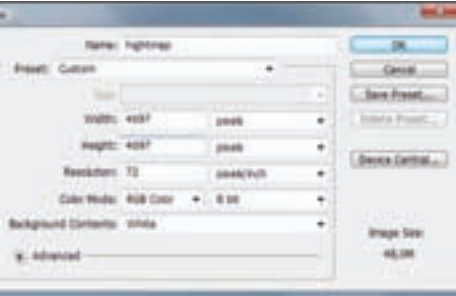
Terragen setup

Laying the foundations



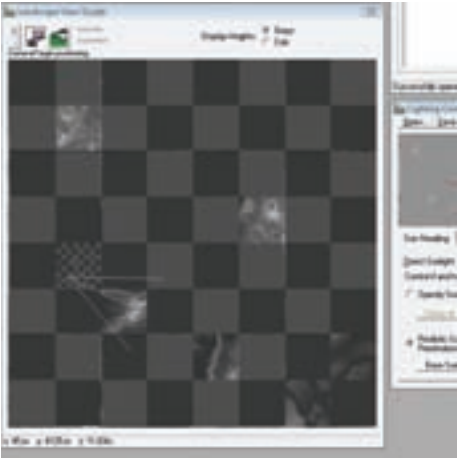
01 Terragen preparation

To use Terragen and self-made terrains, I needed the Firmament plug-in (this can be downloaded for free from www.planetside.co.uk/terrigen/resources.shtml). Photoshop was the program of choice when it came to creating this landscape. I have to use a large-scale terrain to get a clean render off Terragen, while 4,097 x 4,097 is the document size I needed in Photoshop for this particular composition.

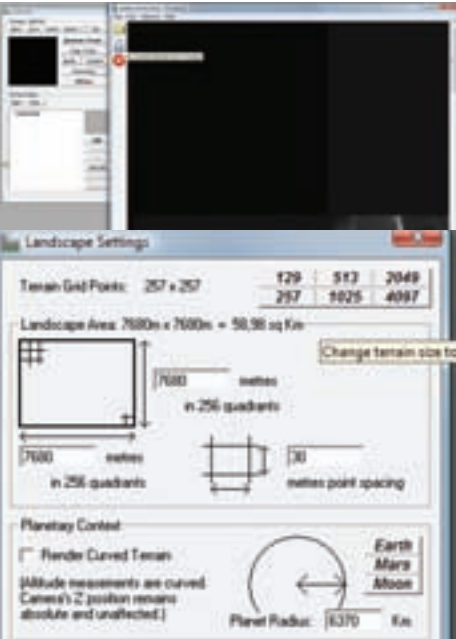


02 Create the terrain

To create my custom landscape, I had to work in black and white only. Brighter shades should be used for hills, mountains or high structures and darker shades for valleys. This is also the part where you can be very creative using brushes in Photoshop. It's a rudimentary way of 3D modelling.



04 Import the terrain to Terragen To import the modelled heightfield into Terragen, I had to adjust the landscape setup in Terragen to match the size of my terrain (Landscape Dialog>Size>4,097). The upcoming dialog boxes were all confirmed with a click on Yes. I followed Landscape Dialog>Accessories>BMP Import, then imported my heightfield.



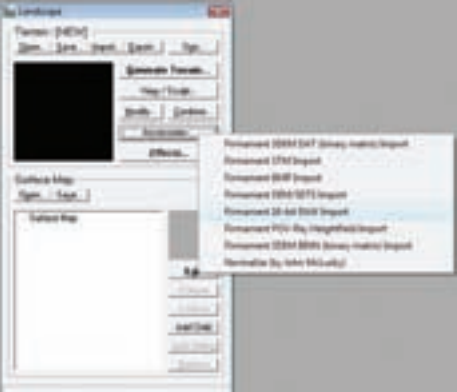
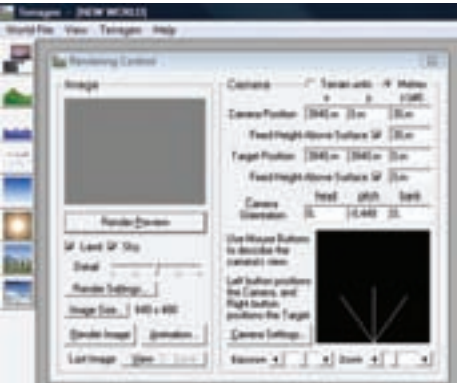
05 Terragen setup

At this point I was able to play around with my terrain. To specifically place the camera, I clicked on the View/Sculpt button in the Landscape dialog box. More specific positioning by numeric values can be done in the Rendering Control dialog box. Lighting and clouds were added and changed via a click on the buttons to the left. Note that Terrain and Atmosphere are saved separately in Terragen.



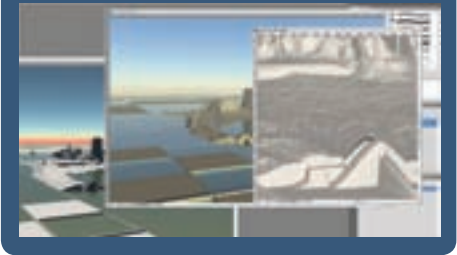
03 Colour depth

The Firmament plug-in supports 16-bit RAW. That should allow you to create more accurate landscapes with Photoshop. Unfortunately, I never really managed to get it to work properly, so feel free to experiment! Besides, 8-bit was totally fine for the project, it just meant that I had to work more accurately, though.



It's all in the details

Test renders are essential and help to find out how the terrain works in Terragen. I often find it's necessary to work in a pixel-accurate method. That means when in Photoshop, you really have to go into the picture and see if the pixels are correct. You will see things wrong in your render immediately. I try to work in a very clean manner, which can be painstaking, but I want to create something outstanding and that demands extra work. I also recommend creating a layered PSD for the terrain, as it will help you to stay flexible.



Into Photoshop...

Work in the textures

07 Render multiple passes

To get the most out of Terragen's atmosphere engine, I had to render multiple passes of my scene, each with different atmosphere settings or even rough textures. The passes kept me flexible when it came to the Photoshop part and helped to add that little extra special ingredient to make it a nice, atmospheric scene.



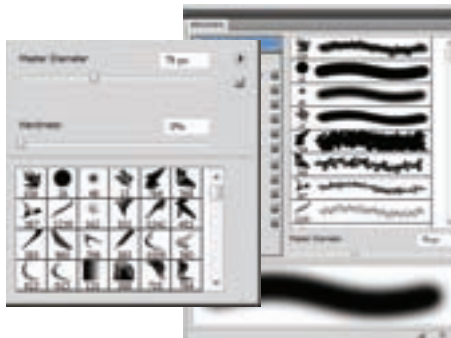
08 Into Photoshop

At this point, it was time to have a look at which render passes were useful for my project. I created a new document in Photoshop and dragged all the renders into it, then created a separate folder named 'Background' within the PSD and moved my renders there.



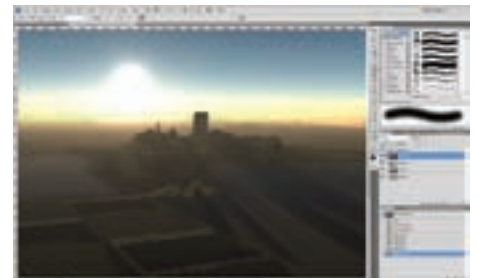
10 Texture in Photoshop

Texturing in Photoshop without a pressure-sensitive tool can be extremely time consuming. With the mouse I just have to adjust manually. Usually, the standard soft round brush is all I need. When on the Brush tool, a Cmd/Ctrl+Ctrl/right-click onto the canvas opens the basic brush menu. There, the Size and Hardness of the brush can be adjusted to taste, if necessary.



09 Blend the passes

Blending modes (Overlay works well, for example) and the Opacity function allowed me to filter the most useful passes and mix them together; the dense atmosphere one as well as the very clean one worked very well. The roughly textured pass also added some useful detail to the scene.



11 The towers

For practical reasons, I only fully textured the tower on the left. For the other two, I just copied the material from the first one and adjusted it to fit the other towers. For a texture, I used two nice photos of planks and wood. My brain immediately saw how it could work for the tower. I then created a new folder for the towers.



13 Texture techniques

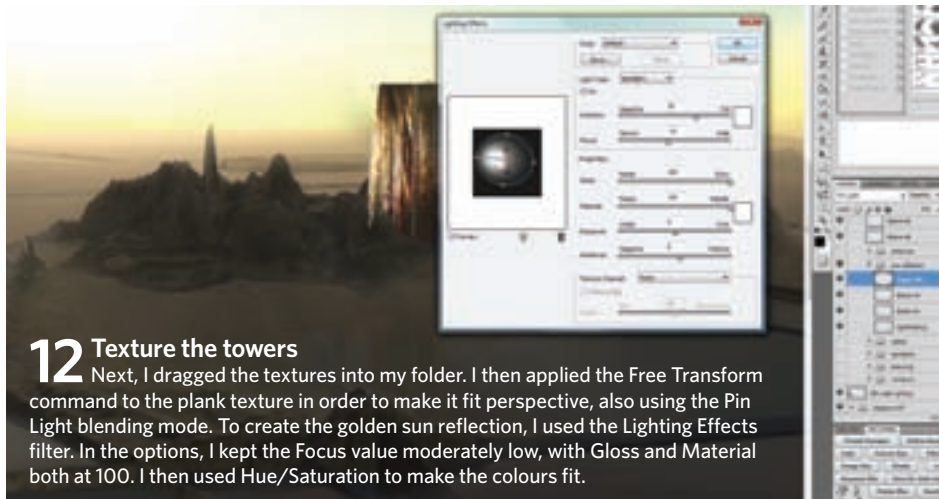
I then erased the middle part of my plank texture and added the wood one using the same technique as before. I painted the middle part black to create space for the windows. It's a good idea to play with the textures and blending modes, even copying the texture and moving it around within the textures, as sometimes you get a cool result, which you might not have expected.

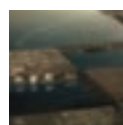


“It's a good idea to play with textures and blending modes, as sometimes you get cool, unexpected results”

12 Texture the towers

Next, I dragged the textures into my folder. I then applied the Free Transform command to the plank texture in order to make it fit perspective, also using the Pin Light blending mode. To create the golden sun reflection, I used the Lighting Effects filter. In the options, I kept the Focus value moderately low, with Gloss and Material both at 100. I then used Hue/Saturation to make the colours fit.





Develop the scene

Build up the urban terrain

+

14 Tower windows

Next, I created a new folder and layer for the windows and used the Polygon Lasso tool to mark the dark area in my texture. I set the Hardness of my round brush to 100 and kept it down to a small size. I used a plain white colour and also activated Scattering for the brush, then painted the windows into my selection.

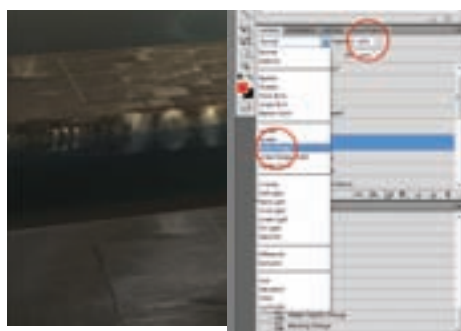


Quick tip

Since I only cover a small part of Terragen, I can only recommend you to play around with it! If you're not sure what an option does, then just hover your mouse above it and it will display a pop-up box with a short explanation. There is also plenty of information available on the internet!

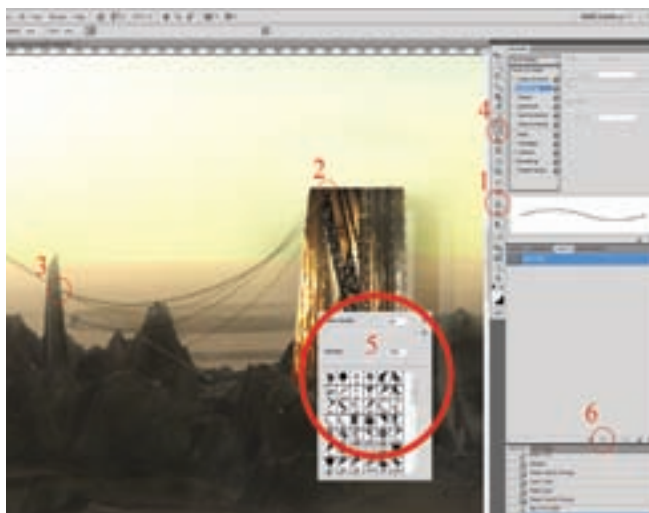
18 Adjust the textures

Sometimes blending modes and playing with opacity help to make it sit right. Reducing saturation and adjusting colours with Hue/Saturation also helps. In this case I almost completely reduced the Saturation bar and used the Color Dodge blending mode. Again, I used the Lighting Effects filter to create that metallic light reflection coming from the sun, and finally adjusted saturation once more.



19 The wall textures

I then created another separate document and basically used the same technique I used for the squared deck plates. Applying Free Transform to the textures allowed me to place everything right onto the walls, while the Eraser tool helped with everything that didn't fit. I repeated this process a few times since there were lots of spots I could use this texture for.



16 Create spotlights

Next, I created a new folder and layer, then made a square selection and filled it with black. I activated the Lens Flare filter and tried to place my flare in the centre. I applied the filter and set the layer to Screen or Color Dodge blending mode – either will do. I then created copies and used the Transform tools to place the lights on the building and anywhere else required in the scene.



17 Square deck textures

For the deck in the foreground, it's best to open a separate document and create a square texture. In addition to blending modes, the Clone Stamp tool helped me to create some variations between the two textures. Once I was done, I flattened the layers and dragged it into the picture. I then placed them above the square shapes and applied Free Transform to make them fit.



Natural elements

Focus on the landscape

20 Landscape texture

Next, I dragged my own photo into the image and placed it above the plain part before the mountains. I reduced the layer size, used Overlay and reduced the opacity. I then applied the Clone Stamp tool where I needed more forest.



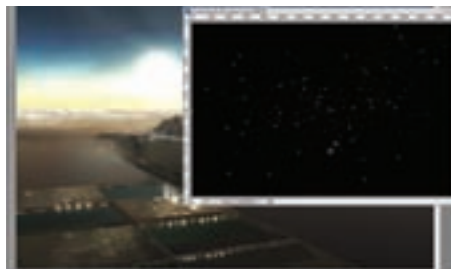
21 Mountain texture

For the mountains, I basically repeated the technique that I used for the forest. Blending modes like Lighten and Hard Light work particularly well in that area. I used the Clone tool to fill other areas on the right with the stone texture. Additionally, detail can be enhanced by copying the texture layer and moving it around.



22 Add clouds

A nice photo with clouds helped me for the background. I used the Eraser tool to extract a cloud; once extracted, I set it to Overlay and it sat in pretty well. I could then Copy and move that layer to add more clouds, as well as change its size or shape with the Eraser for variations.



23 Stars

I created the stars in a separate PSD file, repeating Step 16, and created tons of copies. I then moved it, changed the sizes and also changed the colours via Hue/Saturation, with Colorize checked. I also changed the Glow strength with Levels. When the star field was done, I merged it down, used Linear Dodge and dragged it into my landscape.

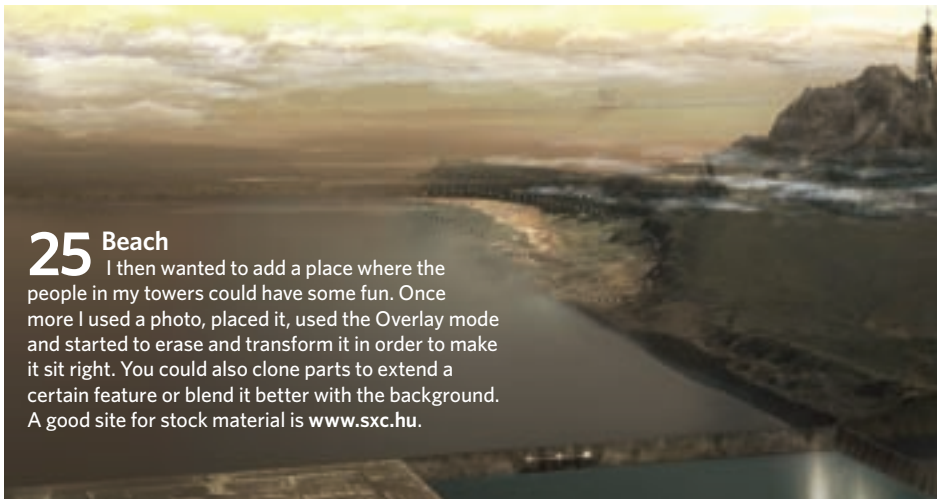
24 Planets

At this point, the sky part looked quite empty so I decided to add planets. Compositionally, the upper-right worked nicely. Planet creation itself can be a very complex thing, so check out an online tutorial at <http://alyn.deviantart.com/art/advanced-planet-creation-11885274>, as well this issue's landscaping feature, starting on page 28.



25 Beach

I then wanted to add a place where the people in my towers could have some fun. Once more I used a photo, placed it, used the Overlay mode and started to erase and transform it in order to make it sit right. You could also clone parts to extend a certain feature or blend it better with the background. A good site for stock material is www.sxc.hu.



26 Reflections

Reflections are always a nice finishing touch. For that, I created a separate folder, copied all my layers into it, merged it all down to one layer and flipped it vertically. The Polygon Lasso tool was best to cut out all the elements I needed reflections for. I then applied Free Transform to those parts and reduced the opacity to make it sit right.



Masterclass

After last month's feature on stereoscopic 3DTV, this issue we're looking at the more unusual lenticular or autostereoscopic 3D; with no glasses required



A basic composition constructed using a lenticular 3D process

Creating lenticular stereo images

“Christian Darkin discovers 3D animation you can watch without wearing dorky glasses”



You know those 3D photos – the ones laminated in ridged plastic in which parts of the image appear to float free of the page if you view them from a certain angle? Well, that's lenticular 3D.

Lenticular display

The final image created by a lenticular display is a composite of (typically) eight camera shots from slightly different angles. Each image is sliced into vertical segments, then interlaced. When you look at the screen, you'll see only the slices focused at the correct angle to each eye and so each eye will receive a different shot. This will only work if you're standing in one of the 'sweet spots' where the lenses focus. If you're not, the image will break up.

Put simply, you take a lot of images, slice them into vertical stripes a fraction of a millimetre wide and reassemble them on the page. You then stick a transparent sheet of tiny, long, thin lenses over the top. When you view the image, the lenses focus a different stripe onto each eye giving you (depending on where you stand) a different perspective on the shot.

Now imagine doing the same with a computer monitor. The result is a 3D display that can show moving images for which you don't need to wear glasses.

There are downsides, of course. One is that to create lenticular images, with a reasonable field of view, you need multiple views of your object (eight is typical). That

means eight cameras in your 3D scene (or eight real cameras if you're trying to film live action!) and eight renders of each frame of your video.

You also need a computer capable of taking your eight streams of action, playing them out and combining them simultaneously. Additionally, the fact that each eye is only getting one eighth of the horizontal image means your monitor will need to have eight times the resolution to get the same quality of picture.

As a viewer, you'll also have to stand in the right place to get the best viewing experience and because your monitor is covered in tiny vertical lenses you can't use it for normal work.

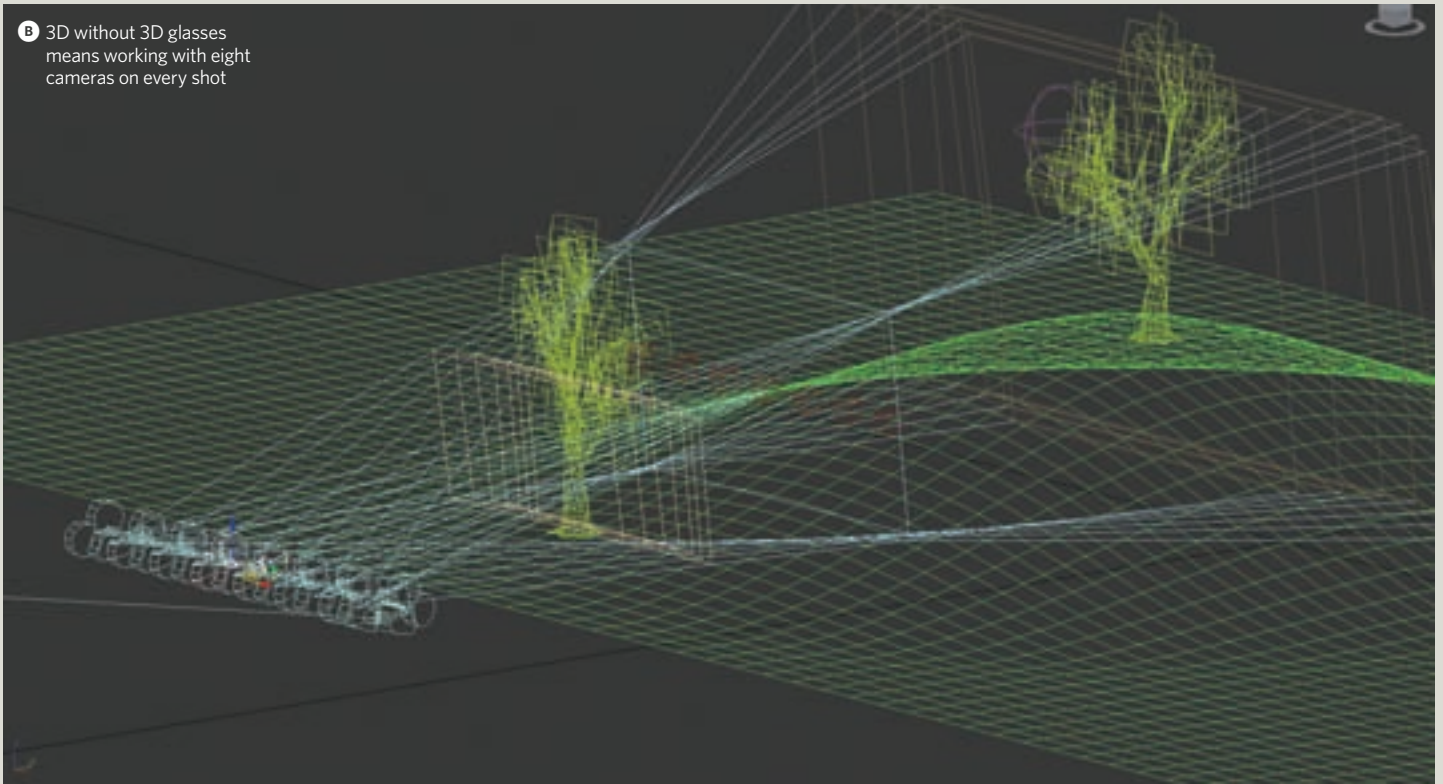
All of which makes lenticular 3D tough, and currently a little limiting. However, it is doable, and increasingly, people are beginning to use it.

In the UK, Inition (www.inition.co.uk) is currently one of the most active companies in lenticular production, selling both the screens and 3D content. At this time, most of its lenticular work goes to corporate events and specific advertising promotions.

Alexander Adderley is one of Inition's top animators, making him one of the few people in the country currently working on

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B 3D without 3D glasses means working with eight cameras on every shot

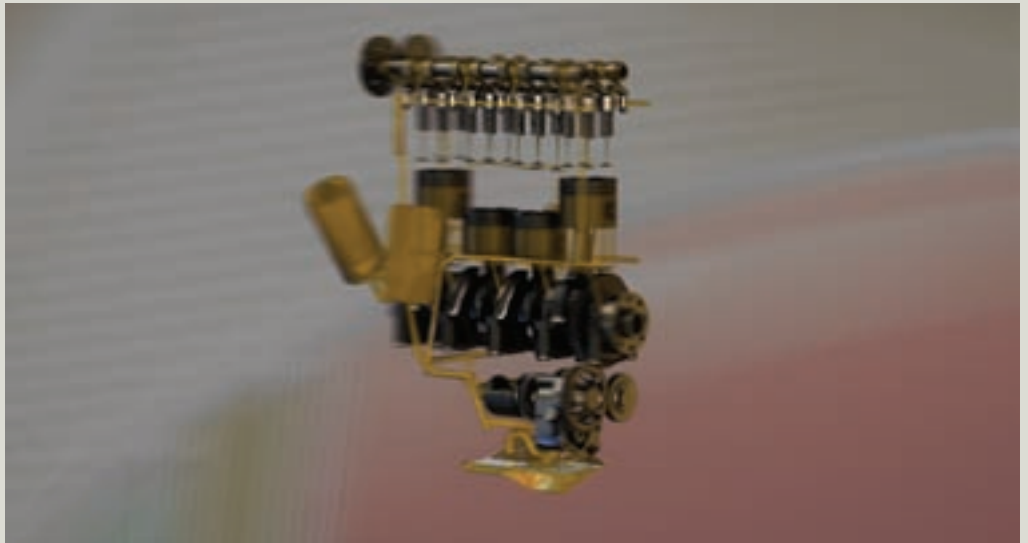


autostereoscopic animation for real commercial projects.

He's still waiting for the technology to settle down into accepted standards. "Currently, there are several competing lenticular screens on the market and each has its own idiosyncrasies," says Adderley. "Most manufacturers provide plug-ins for 3D animators which automate dealing with multiple cameras and renders. Some screens combine your eight video clips in real-time as they play. Others play premixed 3D content. Others still work from a single shot and a depth matte from which they extrapolate 3D data (although this method seems to be losing popularity)."

Either way, the process of creating and animating your work is similar. You need to set up a scene and add a row of identical cameras. The depth of your 3D scene will depend on factors such as the distance between your cameras, their zoom setting and how far they are from the point at which they're targeted.

Buying a specially designed autostereoscopic monitor is fairly expensive right now (even if you can find one). However, there are cheaper ways of doing it. You can buy kits (take a look at www.3dart3d.com), which supply a sheet of lenticular lenses that you can stick onto your monitor. If you're really practical, there



are groups online who describe how you can convert your monitor for just a few pounds (although you need to do a bit of maths and some fairly deft DIY on your screen). The results are of limited resolution, and you need a spare monitor, but they will get you started with this very new technology relatively cheaply.

Soon, we're likely to see lenticular screens crop up more and more in advertising hoardings, corporate offices and other environments where screen owners want to grab the attention of passers-by.

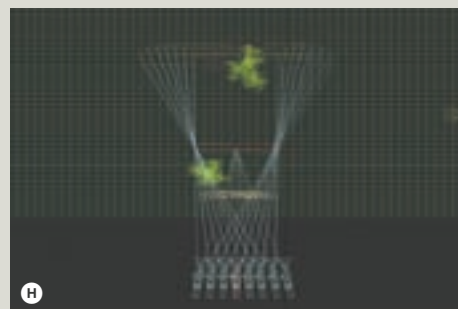
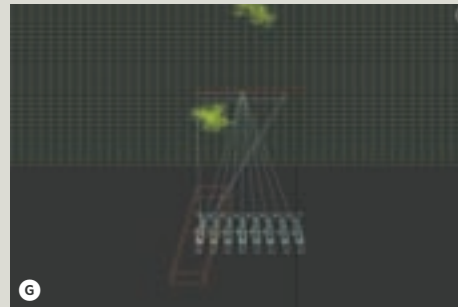
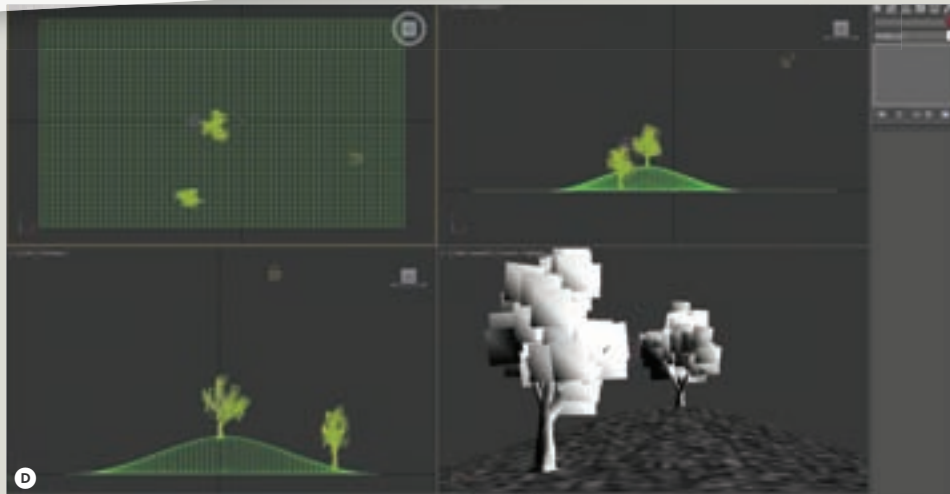
C You have to find that 'sweet spot' to see stuff in focus, otherwise things break up

However, a likely first step for autostereoscopic displays initially is in the field of hand-held devices. "Lenticular animation for mobile phone screens is a lot easier than for TVs" explains Adderley. "With a phone or a hand-held game console, you can be fairly sure the user will be holding it a certain distance from their eyes, and pointing it directly towards their faces. "That takes away a lot of the guesswork, so you don't need to generate and display eight different views. The whole process becomes much easier." Indeed, Hitachi has already produced a lenticular mobile phone in Japan, and the Nintendo 3DS game console is scheduled for release later this year.

“Soon, we're likely to see lenticular screens crop up more and more in advertising hoardings...”

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D Keep your scene shallow, but work as normal

E The position of the camera's target should be at the level of your monitor's screen

F Use one camera to control the settings of all the others

G Skew your cameras so that each has the same field of view

H Setting the environmental ranges gives you a visual guide when estimating where to place objects

01 Build your scene

Construct your 3D scene and light it in just the same way as you normally would.

However, be aware of 3D depth. If there's too much distance between the object nearest the camera and the most distant object, you'll run into trouble. If you have objects in the far distance, consider rendering them out and re-importing as a flat backdrop **D**.

02 Set up your camera

Create a Target camera and place the target at the point you want to define as the depth of the screen. In other words, objects which you want to appear level with the monitor screen should be level with the camera target. Anything between the target and the camera will appear to be floating in front of the monitor **E**.

03 Reference your camera

Duplicate your camera seven times by

Render elements

If you're rendering out multiple render passes (for example, Ambient Occlusion, Reflections, Masks, etc), you'll need to render them for each camera angle. When you get into After Effects, create a composition to combine the render passes and adjust them just as you would for a single shot, get the results right, then duplicate the composition, replacing the renders for each camera angle. Be organised and don't be tempted to tweak things after you've duplicated your layers, otherwise things will get messy very quickly.

creating references (not copies or instances) each side of your initial camera at equal distances from each other. Now link all your reference cameras to the original camera and all their targets to the initial target. Now, when you alter the position of your first camera all the others move too, and when you change the zoom, or other aspects of the camera, your other cameras alter as well **F**.

04 Skew your cameras

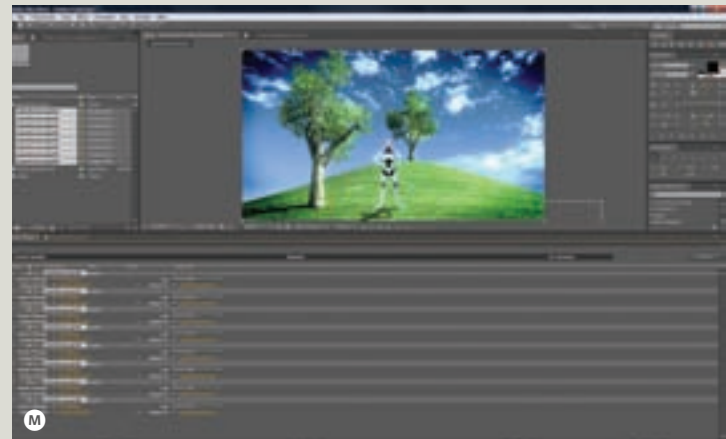
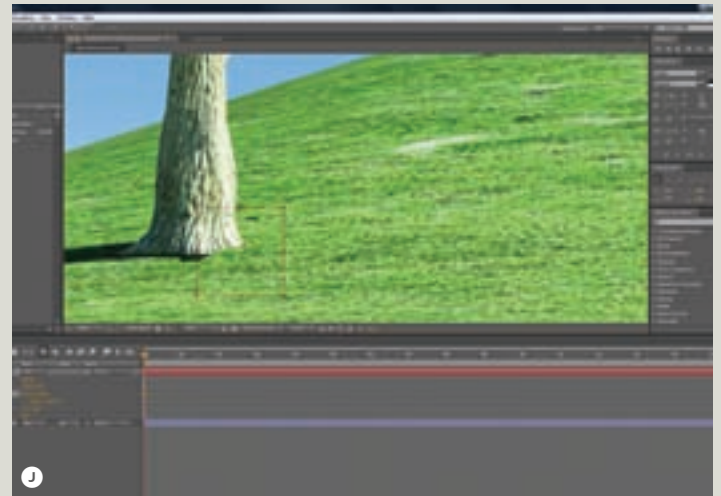
Because you've created references not instances, you can now add a Skew modifier to each duplicate camera and give it a different setting. You'll need to tweak your Skew settings until the frames of each camera coincide exactly at the target point. This is a fiddly job, and will need to be re-done each time you alter any aspect of the camera, so get everything else right first **G**.

05 Check your distances

As with stereoscopic video, autostereoscopic 3D needs to stay within comfortable zones for the eye to make sense of it. Keep most of your objects fairly close to the camera targets because anything you place too close to the

“...you can now add a Skew modifier to each duplicate camera and give it a different setting. You'll need to tweak your Skew settings until the frames of each camera coincide exactly at the target point”

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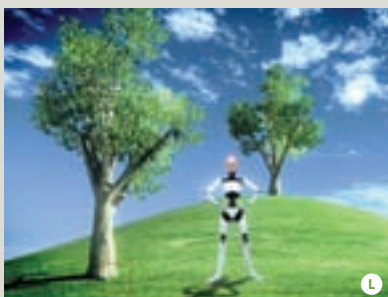
cameras themselves (ie too far 'out of the screen') will start to look wrong. Also, if something appears in front of the screen and it goes out of the frame of the screen, the illusion will be lost **H**.

06 Render your work

Render out the animations for each camera as a separate file (or a separate set of stills) but name them appropriately so you know which animation is associated with which camera. The easiest way to do this is using the Batch Rendering option in the Render Settings **I**.

07 Create composition in After Effects

Import your footage into After Effects and create a composition – best kept fairly



simple on first attempts – with your central camera shot in the background. To make life more tricky, we're adding another (2D) element into the composite. We create a Null object, and move it to place its anchor point over a point in the shot, which is at the same depth as we want to place our new element **J**.

08 Parent the images

Now when we bring in our new scene elements, we can place them on the screen, and then link them to the Null object. We now apply any effects we want to our shot. As much as possible, try to use adjustment layers as opposed to messing around with the background clip itself (as this will have to be replaced seven times before we're done!). Any effect applied to the whole shot is linked to the background shot. Anything applied at the depth of the new element is linked to the Null object **K**.

09 Replace the footage

When you're happy with the look of the shot, duplicate your composition, then replace the background footage with one of your other camera renders. Now reposition the Null object so that the

After your render

It's well worth archiving your final renders before you submit them to whatever process your screen uses to play out the finished work. This technology is moving fast, and it's quite possible you'll want to re-purpose your footage at some point in the future for new kinds of autostereoscopic screen. That's why developing a consistent naming strategy for your clips is essential. Your individual shots will be almost identical, so working out which camera is which when you come back to the project later will be nigh-on impossible.

I With eight cameras for each frame, your render will take a while

J Null objects are useful for keeping all of your composites in place

K Effects need to be linked to the appropriate layers

L Get everything right before you create your final eight composites

M Now you realise why nobody's made a full-length movie in autostereoscopic 3D...

anchor point is, once again, back where it should be, and the rest of your compositing work should move correctly with it. Do the same for the remaining camera angles **L**.

10 Rendering out your scene

Lastly, render out all your shots as separate files. Make sure the quality settings are all the same for consistency, and carefully number the files so that you know exactly which camera each render represents. From here, the process depends on your screen, but all manufacturers will supply software to slice up and reassemble your footage into something suitable for display **M**.

Requirements: Apple iPhone 3G, 3Gs, iPod Touch or iPad >>> iPhone 3.1.2 or higher >>> an Internet connection



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3DArtist Questions & answers

Welcome to the Q&A section where we answer all of your technical quandaries on the most popular 3D programs including Maya, 3ds Max, CINEMA 4D, Poser and Vue

Need help fast? Join the

The advisors

Maya

Lance Hitchings
www.hitchingsdesign.com



Lance is a Maya master. This issue, he shows us how to produce an authentic stainless steel texture using the program's complex shading networks

3ds Max

Ryan Knope
www.ryanknope.com



Ryan can work wonders with 3ds Max. If you need to populate a scene quickly, then mr Proxies could be the perfect solution



Maya

Digital alchemy

“How do I re-create an authentic stainless steel metal texture?”



Brushed stainless steel is everywhere. As a result, it's a material that is in high demand in the virtual world of 3D

renders. In order to build a realistic shading network, we need to understand the properties that give brushed stainless steel its recognisable look.

The striations in the metal catch the light in a particular way. Sometimes every striation along the object's entire length seems to reflect a small specular highlight, causing a long highlight that runs perpendicular to the direction of the striations. This is called an anisotropic highlight. In addition, brushed stainless also has very soft, milky/blurry reflections.

Although there are several materials built to replicate brushed stainless steel, such as the Maya Anisotropic material for one, none of them work as an 'out-of-the-box' solution. This said, we can build a shading network that will give us a very effective result.



A

01 The foundation

We'll start with a simple mental ray architectural material, and apply the Chrome preset. You can build your base metal as anything you like, making it Copper, Brass, Bronze, or whatever; but Chrome is a good starting point **A**.

02 Anisotropic highlights

Next, we'll open the Anisotropy tab and set Anisotropy to 0.100. This will make the anisotropic specular highlight longer. You can also lengthen it by setting it to a value



B

CINEMA 4D

Daniel Lovas

<http://lovas.cgsociety.org/gallery>



Daniel is our regular CINEMA 4D expert. Here, he takes on the difficult task of animating a realistic jet of water using the program's particle system

Vue

Dominic Davison

www.3dartistonline.com/user/dom1



Dom loves to create inspiring landscapes in Vue, as seen in this issue's feature (page 28-35). This month, he's pondering ponds

Poser

Paul Francis

www.3dartistonline.com/user/stormdrainfx



Paul has worked for *Red Dwarf* and is also a talented photographer. Poser's Hair Room is a recent find, but he's already reaping its benefits. Now you can too...

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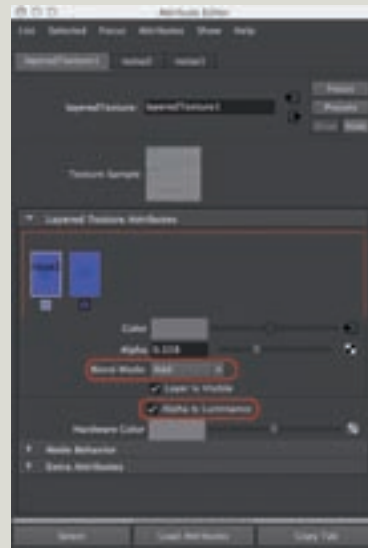
Or post it on the Q&A section on our forum www.3dartistonline.com/forum



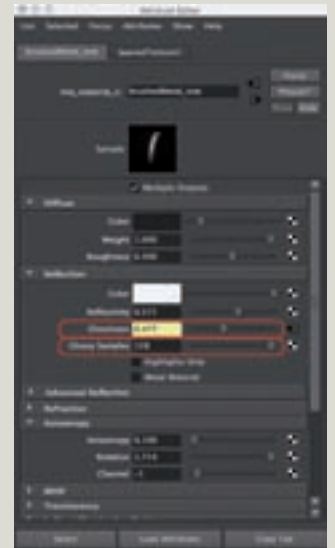
D



E



F



G

higher than 1.0, but I find that setting it lower seems to work better. Next, we'll change the Rotation value until the anisotropic highlight appears vertical in the preview. We'll also want to bring down both the Reflectivity and Glossiness values as this will produce softer, blurrier reflections. A render at this point gives us something that is really starting to look like stainless steel. Keeping the Glossy Samples value low also creates enough noise to almost simulate authentic brushed metal **B C**.



C

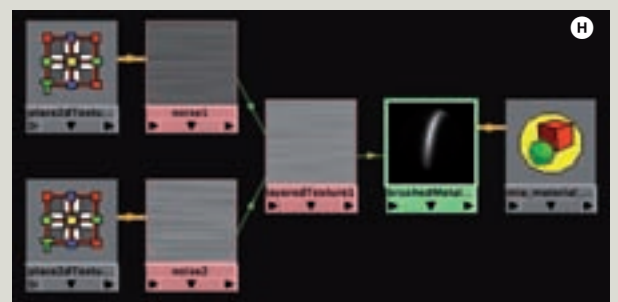
03 Creating the striations

The noise in the blurred reflections doesn't really create any strong striations. For that, we'll use the Noise node found in the Maya 2D Textures. We'll raise the Threshold, lower the Amplitude way down, and lower the Frequency and the Ratio slightly to give us very soft, slightly dark noise. In the 2DPlacement node, for the RepeatUV values, we set the U to 0.100 and the V to 60. This turns the noise into very long, narrow striations.

We'll then duplicate these two nodes, though set the Threshold a bit higher and the Amplitude a bit lower to give a lighter set of striations. But the big difference is that in the 2DPlacement node, for the RepeatUV values, we'll set the V to 5.0 instead of 60.0 **D E**.

04 Blending the striations together

Now we need to combine these two Noise nodes using a LayeredTexture node, which can be found under Other Textures. It doesn't really matter which order that you place them in the layered texture node; however, what is important is that you set the Blend Mode to Add. Also, it's very important to make sure that Alpha is Luminance is checked. By blending these two Noise nodes in the LayeredTexture



H

node, we wind up with more random – and therefore much more realistic – striations, and are considerably less likely to start seeing patterns **F G**.

Finishing your brushed metal texture

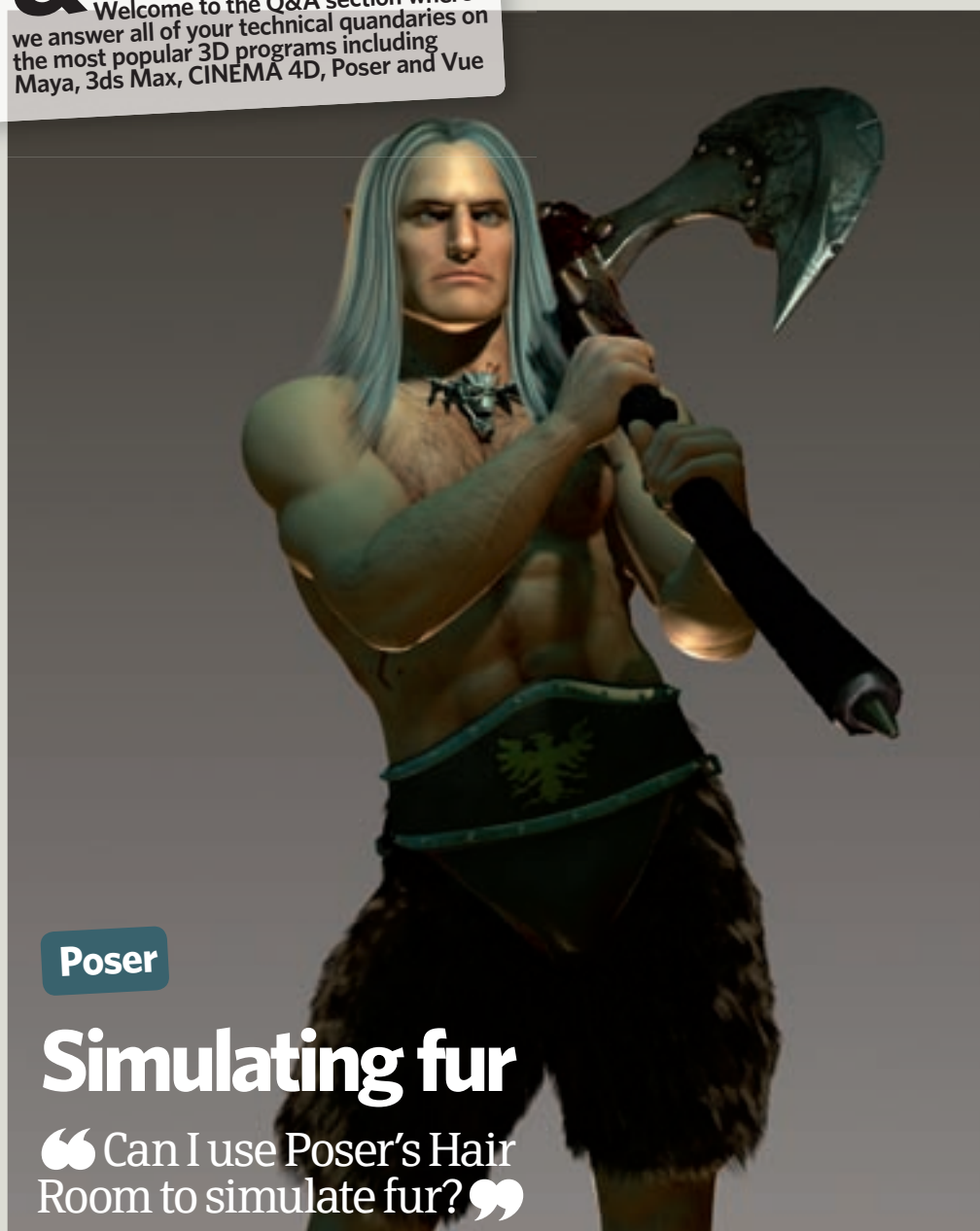
Finally, we'll plug the layered texture node into the Glossiness attribute of the architectural shader. Set the Glossy Sampler to something like 128 to clean up the noise. The lighter area of the striation will show up in the render as tighter reflections and the darker areas as blurrier reflections. These differences will produce anisotropic reflections and generate the realistic striations that we're looking for **H I**.



I

Questions & answers?

Welcome to the Q&A section where we answer all of your technical quandaries on the most popular 3D programs including Maya, 3ds Max, CINEMA 4D, Poser and Vue



Poser

Simulating fur

“Can I use Poser’s Hair Room to simulate fur?”



It had to happen... a question about the dreaded Hair Room; hands up, all those who've ever actually used it? Seriously

though, I had used Poser from version 3 up to the latest release before I thought of the Hair Room as anything other than an awkward gimmick and a waste of resources. To judge by how well ready-made Poser hair models sell, it wasn't just me that had consigned the Hair Room to the mental dustbin. Then came the day that I needed some fur shorts – not me personally, you understand, but for the barbarian figure seen in the tutorial in issue 13 of 3D Artist. I had tried and failed to model them in ZBrush and was about to give up when I realised the answer.

The basic concept behind the Hair Room is simple enough; you select a

group of polygons, or a whole prop, and 'grow' the hair from the surface. As ever with Poser, the actual mechanics of achieving something useful are a bit idiosyncratic, but in this instance, it actually worked first time. Instant bear fur, and you can use the same technique to model grass as well.

01 The basic concept

The idea behind the Hair Room is that you create or make use of a prop as a base to grow the hair on; the hair can then be styled, edited and textured to your exact specification. For Michael 4 here, I already had a pair of shorts in the scene which would conform to the figure's motion and morphs, so I decided to try and use those as the base prop. I've hidden all the other elements in the scene for clarity.



The guide hairs for each growth group – the left thigh has the default values, the hip and right thigh have the fur settings



The test render of the shorts, with the default material applied – not bad for a first attempt and easily improved with a custom texture

02 Miracle hair growth

Once in the Hair Room, make sure you have the desired prop selected – in this case 'Pants M4 – Right Thigh', and then click the button at the top right labelled New Growth Group; this will produce a pop-up, labelling your new group as 'Hair_1'. Click on Edit Growth Group and a complicated menu appears. Click Add All and the right thigh will turn red to indicate it has been selected. Close this and click Grow Guide Hairs – you should end up with something very spiky and not at all like hair or fur, but don't panic. You'll need to do this for each section of your prop.

03 Styling the hair

This is where the magic happens! There are a range of parameters associated with the hair you have just created, the most important being Hair Density; I used 5,000 for each hair group. For Length, I used 0.1 and Length Variance 0.6. Another key setting is the Verts per hair. The default number of vertices is 20, which is way too high; 4 will do just fine, and will really help with the system resources too. For the screengrabs here, I rendered the fur with the default material, but it can be assigned a material just like any other object in the scene.

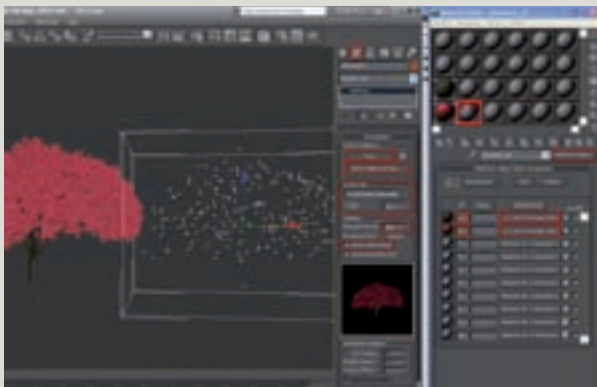


Populating by proxy

“Please can you give some advice on using mr Proxies.”



Using proxies can alleviate a multitude of major stresses for both you and your machine in a detailed scene. Proxies work great for trees, bushes, cars, people and just about any other type of model that you need to populate in high numbers. Proxies also work fantastically for high-density meshes. Utilising proxies is very common in master plans and outdoor scenes where you need thousands of high-poly objects and are short on time.



The proxy output settings, result and the assigned MSO material

One model – one material

A mr Proxy can consist of only one mesh and material. This means that you will need to combine the models and use a Multi/Sub Object material, utilising different Material IDs for the previously separated parts.

First, use the Eye Dropper tool to make sure that you have all necessary materials in the Material Editor. Select the first object and, within the Face Selection mode, change the Material ID to your preference. You can now repeat this step for the other objects.

With one object selected, go into Edit Poly and click the Attach List button. Find the object you want to apply and hit Attach. Another dialog box will pop up and give you three options. Pick the last one: Do Not Modify Material IDs or Material. Now you have a single object with proper Material IDs.

Creating Multi/Sub-Object material

Go to an open Material Editor slot and change the material type to Multi/Sub-Object (MSO). You should see ten materials in order of ID number. Drag/Copy the prior materials into the properly numbered spot. Now you can apply the MSO material to your combined object.

Creating the proxy

If you go to the Create tab and scroll down the creation list, you will find Mental Ray and MR Proxy. Click the button and drag out a MR Proxy box. Now go to the Modify

panel and pick the combined mesh from where it says Source Object.

Click the Write Object To File button and choose the saving destination. I have been using the default properties that pop up, and saving the file itself to my tree library.

You should now see the proxy box filled with vertices. You can specify more or less. I usually save the MAX file with both the object and proxy, as well as a MAX file of just the proxy, which I then import into my destined scene.

Utilising the proxy

Once you have created the proxy, the question is: how do I populate the scene with hundreds of versions of the object most quickly and effectively?

In 3ds Max 2010, the Scatter tool doesn't work with mr Proxies, although the Spacing tool does. This is good news for automobiles, but bad news for creating a forest quickly.

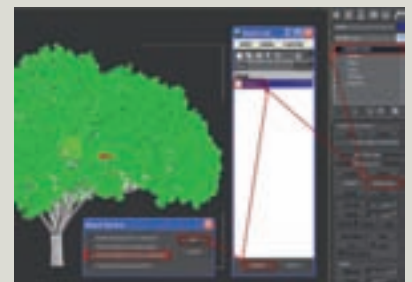
In 3ds Max 2011, however, Object Paint does work with mr Proxies. This makes painting a woodland, as in this example, or indeed any similar natural landscape, significantly easier for forest fanatics.

A few good things about mr Proxies:

- 1) They don't take up many resources like standard objects. The geometry is only loaded into RAM during render time, compared to normal geometry which is loaded twice.
- 2) They retain Material IDs, so adding material variation on a bunch of trees or other objects couldn't be easier.
- 3) Viewports move with great ease.
- 4) Object Paint in 3ds Max 2011 is compatible with mr Proxies. This now makes painting a dense forest a cinch.
- 5) mr Proxies remove translation time during render processing.

A few bad things about mr Proxies:

- 1) Seeing exact location is difficult without a large Viewport Vert Count.
- 2) Placement on a grand scale can be difficult.
- 3) There's a limited use of tools and functions with mr Proxies. There's also a 3ds Max plug-in called MultiScatter that can be used to generate a high number of the same object or several objects, creating a small top load. This plug-in works with both V-Ray and mental ray proxies.



Process of attaching models. Make sure to note/complete Material IDs before attaching!



Jet-setting

CINEMA 4D

“How do I create a jet or stream of liquid?”



A jet or stream of liquid is a physical phenomenon that is non-linear. That means, if we wanted to describe it accurately using mathematics, we would get a system of differential equations that cannot be solved in an exact manner; systems such as these are known to be unpredictable or chaotic.

To simulate such natural processes on a computer, the 'ordinary' math can only be

of limited help. What is needed in such cases is an iterative approach, ie an iterative method. The results of the first series of calculations (or the first iteration) become the input data for the next series, and so on.

So to go back to our initial problem, to simulate a non-linear, chaotic physical phenomenon such as the fluid dynamics in 3D software, the usual way is to use a particle system. A particle system in 3D graphics is a collection of independent entities, known as particles, that are animated on the basis of iteration and are based on a set of rules with the intention of modelling some effect. CINEMA 4D comes equipped with an excellent system of Thinking Particles, which can be used, among other purposes, to simulate an impressive list of dynamic liquid behaviours. Based on that knowledge and with some elementary knowledge of how to use the Thinking Particles in CINEMA

4D, it should be fairly easy to achieve more complex results. In this short tutorial I'll try to explain only the basic procedure of modelling a dynamic liquid. We will use the particle system to deform a Metaball object. A Metaball in CINEMA 4D is a sort of 'skin' that can be stretched over other objects and can be deformed by them. In the first step, we'll set up a basic particle system. In step two, the basic particle system will be modified by adding some effectors that will help shape the fundamental form of the liquid jet and that will add some chaotic motion to the particles. In the next step, we'll add a simple object to replace the particles and actually later deform the Metaball. In step four, the Metaball object will be inserted into the hierarchy and a Metaball tag will be applied to the deforming object. Their parameters will be tweaked in step five to get the correct shape and, finally, we'll create and apply a suitable material.

Why does it look like ice?

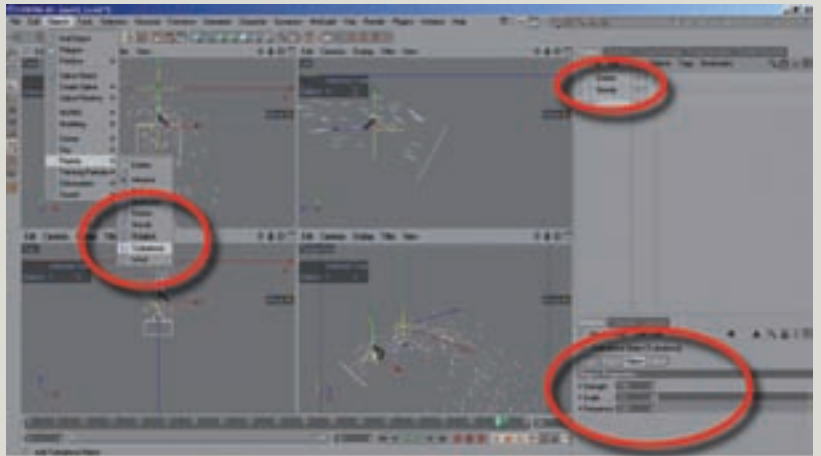
If you followed this tutorial, after completing the final step and rendering, you might wonder why the final result still doesn't look like a flow of water but rather like an irregular piece of ice. Don't waste your time by trying to find out what you did wrong because, in fact, there is nothing wrong with the scene. If you took a photograph of a real stream of water with an extremely short exposure, it would look similar – due to the lack of the motion blur! Now, the adding of motion blur in CINEMA 4D or in an external software is a story that deserves (and needs) a tutorial all of its own.

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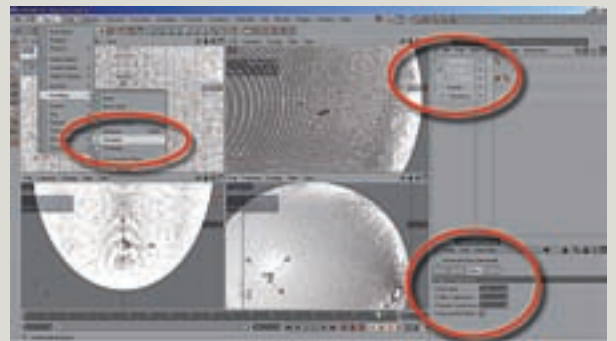
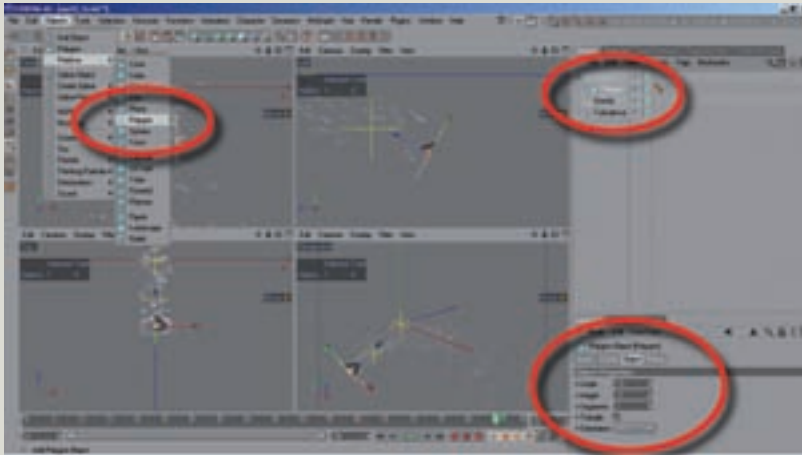
01 Setting up a particle emitter

Start by adding a particle emitter to the scene. In its settings, change both the Birthrate Editor and Birthrate Renderer to 100, End Scale Variation to 90 and check the Show Objects option. Click on the Emitter tab and change the Emitter Type to Cone. Rotate the emitter so that its Z axis points 45 degrees up. Play the animation in the selected view and enjoy the straight flow of particles that looks nothing like a fluid stream.



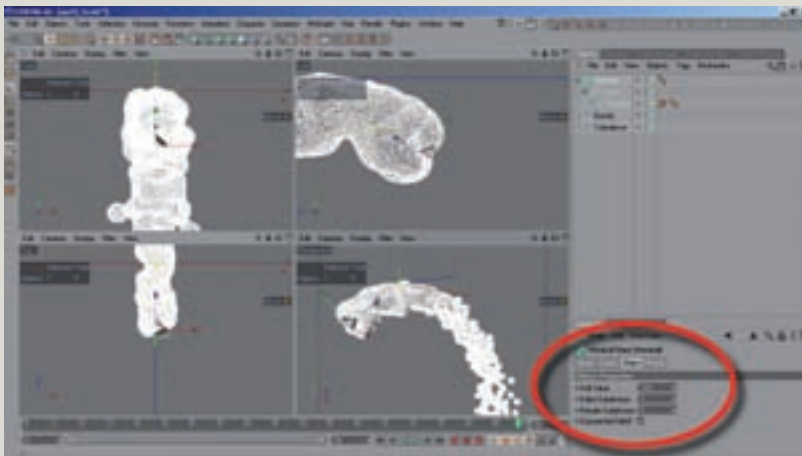
02 Forming the particle stream

In order to force the stream of particles into a more natural shape, some additional particle effectors should be added. Add Gravity Object from the Particle sub-menu. In its settings, change the Falloff value to 900. If you play the animation now, you'll notice the correct parabolic form of the stream though it still looks unnatural. Now add a Turbulence Object from the menu and set its Strength to 50 and its Scale to 10. It should now play more naturally.



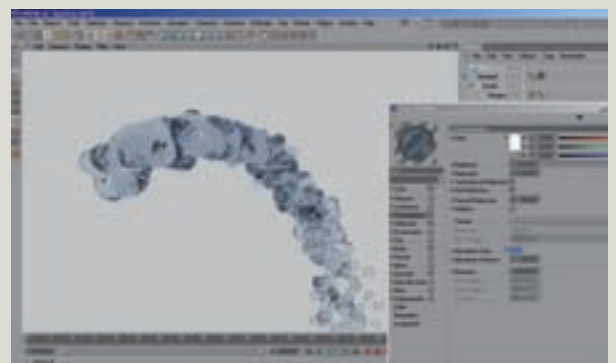
03 Setting up the deforming object

Particles themselves will not deform the Metaball object – they are just dimensionless points in space – so we need an object to represent them. Select Objects>Primitive>Polygon and in its settings check the Triangle option and reduce both its Sizes to 10. Next, make it a child of the emitter. You'll instantly notice that all particles are now replaced by small triangles of randomly varying sizes.



04 Metaball Object and tag

It is time to add the main actor – the actual Metaball Object. Don't worry if you get a huge, more-or-less regular shape that looks nothing like a stream of fluid. The Metaball Object has some important parameters that need to be adjusted in order to get the approximate effect that is expected. Besides adjusting the Metaball settings, you can also assign the Metaball tag from CINEMA 4D Tags to the Polygon inside the emitter hierarchy.



05 Fine-tuning the settings

In this particular example there is not much additional fine-tuning to be done. In the Metaball settings, change the Hull Value to 200, both the Render and Editor Subdivision to 5 and check the Exponential Falloff option. If you re-run the animation, you should now get the final result that looks like a jet of liquid. By using other particle effectors, Thinking Particles, etc, you can adapt the same technique to get the jet interacting with other elements in the scene.

06 Creating water material

That 'milky' look might have been your intention in which case you can skip this step. For everyone else, create a new material and apply it to the Metaball Object. Activate the Transparency, Reflection and Bump channels. Set Transparency Brightness to 97%, Refraction to 1.4, Absorption Colour to a blueish tint and Absorption Distance to 300. Now set other channels as you usually would for water or glass materials. Optionally you can add some noise via the Bump channel.

Questions & answers?

Welcome to the Q&A section where we answer all of your technical quandaries on the most popular 3D programs including Maya, 3ds Max, CINEMA 4D, Poser and Vue

Watering hole

“How do I create a realistic pond in Vue?” **Vue**



When constructing a scene that includes water – especially an ocean – the obvious choice is to use an infinite water plane. The problem with this is it

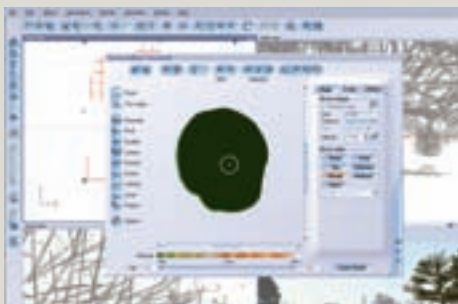
can't be moved around the scene, only tilted at an angle. So when constructing a smaller water feature, such as a pond, puddle or river, we need to look at smaller alternatives. A small flat plane can be converted to a water material, and can then be resized and placed in any part of the scene. Bump and Scale settings can be added to this water

material and are important when it comes to how the finished water will look. So a pond will need the Scale increased and the Bump settings decreased to give the calm appearance of a pond's surface (as opposed to an ocean with a rough Bump surface). For a more advanced way of constructing a pond, you can use the Terrain Editor. This gives the user the ability to paint a shape and then convert it to any type of material.

Choosing the right materials for that terrain is vital in getting a realistic water surface. The

Channel Water found in the Liquid material library is a good start, as it is a murky green consistency so is ideal for a pond or river. The Water lilies material is also a good choice as it's similar to Channel Water, but with water lily flowers included on the surface. By darkening the colour of these two materials and increasing the Highlight global intensity, we get a nice reflective surface.

The pond terrain is ultimately a flat plane. Remember to surround the pond with bushes, weeds and flowers to establish a sense of depth.



01 Shaping the pond

Firstly select a Standard terrain from the side panel and double-click it to enter the Editor. Now hit Reset and move the Clip slider to Max, until the terrain disappears. Select Paint on the right-hand panel and choose Altitude from the Brush mode. Adjust the Altitude to between 5.00 and 10. Now we can paint our pond shape with the brush.



02 Resizing and placement

Next we need to resize and position the pond. Drop the pond terrain onto the surface by clicking the Drop object icon on the left-hand toolbar. Now select the Numerics tab in the Object Properties panel. Click on the Size box, and to adjust the height or depth of the pond, increase or decrease the Z setting accordingly. In this case, it is set to 0.040.



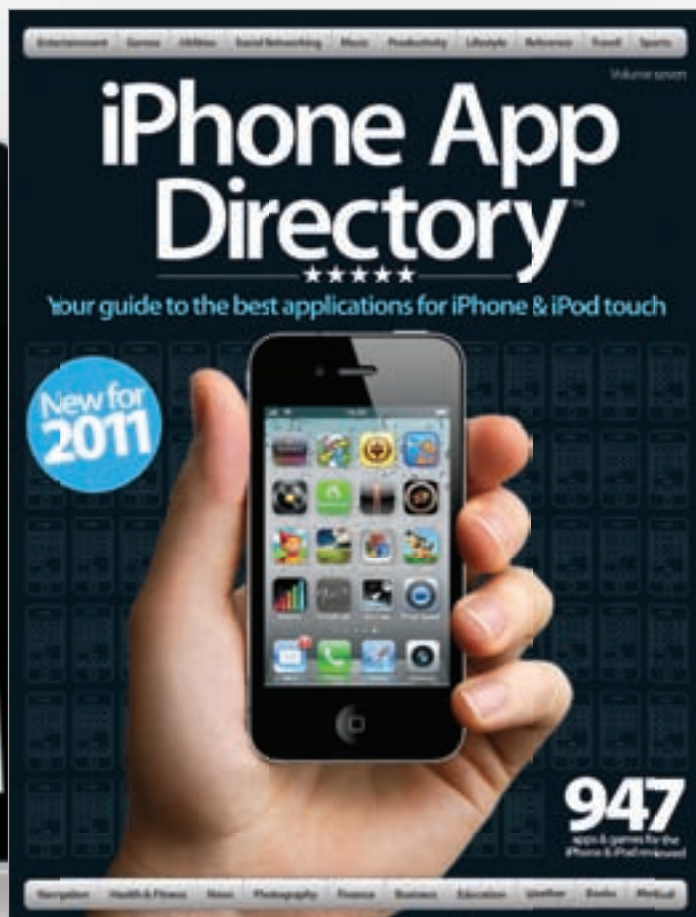
03 Pond water materials

Select the terrain and click Load Material to bring up the list of materials; choose Liquids and then select Channel Water. Next change the colour of the water to a very dark green or even black. Change the Bump setting to a depth of 0.005 and keep the Scale at 1.00. Highlight global intensity can be set to 70% and Highlight global size to 99%.

It's a jungle out there. Swing through it



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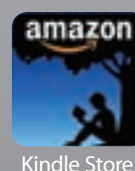
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3D Artist Back to basics

Phil Cooke demonstrates a quick way to create clothing models for Poser and DAZ Studio

On the Disc

Texture, libraries and geometries on the disc



^A Poser/DAZ

Make outfits for V4

“ Phil Cooke explains how to create clothing models to fit 3D figures in Poser and will include the modelling process, texturing, rigging and more ”

I used to be a plumber by trade, which may be an unusual way of introducing an article about 3D modelling, but it serves to show that if I, with no formal computer or graphics training can do this, then so can you. This tutorial will explain how to create clothing models to fit 3D figures for use in the Poser application by Smith Micro. The finished conforming model will also be compatible with DAZ Studio. It will include the modelling process, UV mapping, texturing, rigging and explain the differences between conforming and dynamic clothing. I'll conclude by touching on what has become known as hybrid clothing which is a combination of conforming and dynamic. Although the

task is by its very nature complex, I aim to show that by breaking it down into a series of small steps the process may be undertaken by folks with, what may be described as, good computer common-sense rather than advanced qualifications in 3D graphics.

Modelling application initial setup

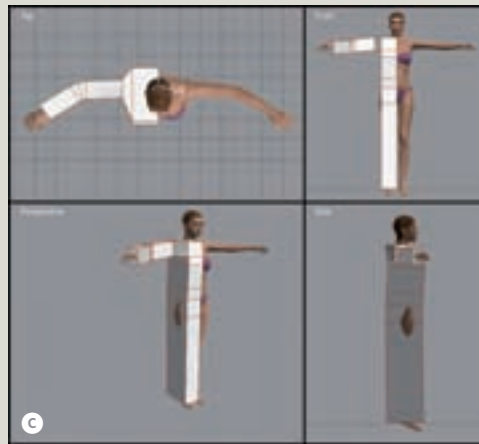
I model in trueSpace but any 3D modelling application that supports box modelling and subdivision will be suitable. Start by importing the V4 Wavefront OBJ file into your scene. You'll find it under 'Runtime\Geometries\DAZPeople\blMilWom_v4b.obj'. If you need to alter the scale be sure that you

scale from the world origin so that upon completion you will be able to scale down again with consistent results. If you try and scale from the model's centre you will find you'll get misalignment issues. Load in a cube primitive, then because we will be modelling one side and making a mirrored copy for the other, the face coloured red in screenshot ^B has been set on the centre line.

Apply the Extrude tool

At this stage, the topology is all important. Extrude in a way that the edge loops roughly align with the primary V4 body parts; top of shoulder, under arm, bust line, waist, hip, etc. Extrude the sleeve out from the shoulder. Note the three edge loops positioned at the elbow, these are required to ensure there are sufficient polygons in this bending area. Also make sure that the centre faces stay on the centre line or you'll get gaps when we come to create the mirrored half.

^A Dress models to impress in a range of colours using Poser

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At this point I have activated the Mirror modelling tool to get a better idea of the overall shape. Then start to move the vertices to refine the shape. Switching between Solid and Wireframe view as you build up the model helps to guarantee that you get a good close fit to the V4 figure. Add more edge loops if necessary to further refine the shape. I find it best to work in one area at a time while frequently keeping an eye on the overall style for consistency. Keep it simple, do not add more loops until you're certain that they're required.

With the shape correct, continue adding edge loops to create an even mesh. Generally you want to keep to quads (four-sided polygons) as much as possible. I have, however, used some triangular polygons under the arm and in the lower portion of the sleeve.

Extrude faces

If you are not familiar with the term 'extrude', here's an explanation. It refers to pulling out and essentially adding extra bits to alter the shape of an object. Most, if not all, 3D modelling applications have some form of extrusion tool. In some it is known as the 'loft' tool.

You can now subdivide the mesh to produce the final geometry. In this example it results in a little over 6,000 faces which I know from experience will be fine for what we are trying to achieve. Notice that I have 'colour coded' the mesh to align with V4's body parts. This will be helpful in the next stage when defining the model's grouping.

If you scaled the V4 model up at the start of this section you will now need to scale the completed dress down by the same amount. Again, be sure to scale relative to the world origin as scaling relative to the model's centre will introduce misalignment. Save in Wavefront OBJ format.

Grouping and UV mapping

Now it's time to assign areas of the geometry to the required body part groups and provide the means by which textures may be evenly applied to the model. My application of choice for this is UVMapper available from www.uvmapper.com. A free Classic version is available which will do the job nicely.

Start by opening the 'Dress.obj' file and applying a front Planar map to the mesh. Basically we are just looking at the dress from the front. By right-clicking the mesh and selecting by material, it is very easy



to select then assign sections of the mesh to the required body part groups. Ensure that your group names exactly match the internal names of the V4 figure for ease of use. You can check the internal names by loading V4 into the Poser scene, selecting a body part and looking in the Properties panel. There are other methods of assigning the body part groups. For example, you may prefer to define the groups in your 3D modelling application, or Poser does in fact have a Grouping tool. However, even after all my years of using Poser, I still find the described method gives the most control. Remember to save early and often.

The aim of a good UV-mapping solution is that when a texture is applied to a model, there should be no evidence

- B** Import V4 model, scale and add a mirrored cube primitive
- C** Extrude the cube to 'box out' the basic shape of the dress
- D** Hone the dress shape with more edge loops
- E** Subdivide the mesh to produce the geometry planes
- F** Add colour to your dress model
- G** Colour code the mesh for the grouping stage



+ of stretching. In this example, I have split the model front and rear and separated out the sleeves. I have then applied a Planar map to each section along the Z axis. This was followed by smoothing each portion. Applying a test chequer pattern is a good way of testing how good your map is. Notice that the squares are even throughout and that the squares on the sleeves are the same size as the bodice. Unless there is good reason not to, I suggest that all the major components of a model should be mapped at the same scale.

Upon completion save the model in OBJ format. You should also save the UV map so that it may be used as a template when creating the texture. You can save in any aspect ratio although I feel that Square Aspect Ratio is the most common and useful. The default template size in UVMapper is 1,024 x 1,024; for this

project I opted for 4,096 x 4,096 because I wanted to create a higher-resolution texture in Photoshop.

Dynamic cloth

The model is now ready to be taken to the Poser Cloth Room. Start by loading the V4 figure into the scene and placing her in the 'zero pose'. The zero pose is such that all rotations, translations and morphs are set to zero and all scaling is at 100%. If you use the Zero Rotations option in the Poser Joint Editor, be sure that you first turn off all the figure's IK chains otherwise you will get a false result. V4 arrives into the scene with all hip and body translations set at zero but not all figures do, so it's best to double check, just to be sure.

The next step is to import the 'Dress.obj' file using the Poser menu File>Import>Wavefront Object. In the

Import options, ensure that none of the checkboxes are selected. Provided that you had everything scaled and aligned correctly in your 3D modelling application, this will ensure the dress arrives into the Poser scene correctly sized and positioned to fit the V4 figure.

Use the Set Parent button in the dress Properties panel to parent the dress to V4's hip. This will not make the dress mould to the figure's pose, but it will allow the dress to stay with the figure if V4 is moved to another location.

The dress may be used as a dynamic cloth prop in the Poser Cloth Room by following the following method. Advance to Frame 30 and place the V4 figure in a desired pose. Click the Poser Cloth tab to enter the Cloth Room and hit the New Simulation button to define a new simulation. Ensure the simulation range matches the frames of the animation, the Self Collision option is selected and set Drape Frames at 0. Click Clothify and, from the pop-up, select the dress. Select Collide Against and V4. Initially, go with the default dial settings. Include the option to start draping from the zero pose. Lastly because none of the mesh is going to collide with V4's head, exclude this to speed up the calculation. For everything else, initially I'd just go with the default settings. Finally hit Calculate Simulation and let Poser do its thing.

H Put the model in the zero pose and import the dress

I Parent the dress and pose the model as desired

J Turn the dress material into dynamic cloth

Join the community at www.3dartistonline.com**Deleting in the Hierarchy Editor**

I suggest keeping one bone past the end of each hierarchy chain. For example, the dress ends at the forearm so keep the hand, but delete all the fingers. That said, I do tend to keep the torso up to and including the head, as some figures go out of whack at the chest if you delete the neck. Deleting surplus bones is not essential but does result in a generally tidier file. I would, however, suggest that you do delete any IK chains because if there is no particular reason for keeping them, they tend to get in the way. Similar to deleting bones, you do this via the Hierarchy window, by selecting an IK chain and hitting the Delete key.

You can now save the dress to the Poser Prop Library. Although its cloth properties do get saved into the file, it should be noted that you need to run a simulation every time you use the model.

Conforming figures

At this stage, I will explain how to configure the dress model as a conforming figure. Through this function, the dress will move seamlessly as the figure moves. In a similar way to the dynamic version start by importing the 'Dress.obj' file. Remember that none of the Import option checkboxes should be selected. Click on the Poser setup tab and open the Library window. In the Figure library, navigate to the V41 BLANK figure. It is a version of the V4 figure which has had all of the morphs, magnets, bells and whistles removed.

Once you have located the BLANK file, double-click on its thumbnail and Poser will add its rigging to the dress. We have previously assigned the geometry body part grouping so the only thing that you may want to do at this stage is to delete out any unwanted bones. Go to the Poser menu and select Hierarchy Editor. Select an unwanted bone and hit the Delete key. Take care when carrying out this task though because this process can't be undone. I suggest keeping one bone past the end of each hierarchy chain.

Upon completion return to the Pose Room where I suggest that you immediately save the figure to the library. Poser will also save a copy of the



“Deleting surplus bones is not essential but does result in a generally tidier file”

K

geometry into the same directory as the figure file. It's fine to locate the OBJ file here, but note that by doing so, users will be restricted to where the figure file is placed. A better option may be to place the OBJ file in the Geometries directory and edit the file paths in the figure's CR2 file to point to the revised location. Also note that the geometry saved by Poser will have unwelded seams which may affect any future morph creation.

Next load in the V4 figure, select the dress figure and conform it to V4 using the Poser menu Figure>Conform to.

Joint adjustment and hybrid clothing

Bending the V4 forearm results in some of the sleeve being left behind. In this instance, simply turning off the bend's falloff zone in the Poser Joint editor will correct this. Note that you'll only have to work on one half of the figure. You can copy one side to the other by using the Poser function Figure>Symmetry.

Hybrid clothing is a conforming clothing figure in which some part or parts are treated as dynamic cloth. I'll now take the conforming clothing and show how the lower portion of the sleeves may be draped in a more natural way in the Cloth Room.

The first task will be to stop the existing sleeves from conforming to V4's forearms yet still remain part of the dress figure. This is done by changing the body part names. Open the dress CR2 file in a text editor. Search for 'rForeArm' and replace with 'rSleeve', then 'lForeArm' with 'lSleeve'. Save as 'Hybrid Dress.cr2'. Open the 'Dress.obj' file in a text editor and replace 'rForeArm' with 'rSleeve' and 'lForeArm' with 'lSleeve'. Save as 'Hybrid Dress.obj'.

Now open the 'Hybrid Dress.cr2' in a text editor again and edit the geometry path to that of the new OBJ file. There will be two instances where this path is defined. For your guidance, the path names will look like this: figureResFile : Runtime:Libraries:Character:Back to Basics:Dress.obj and figureResFile : Runtime:Libraries:Character:Back to Basics:Hybrid Dress.obj.

Load the V4 and hybrid clothing figure into the Poser scene and conform the clothing to V4. Set up a short animation in the same way as we did for the dynamic cloth model. With the exception of the sleeves, the dress will follow the figure. Switch to the Cloth Room, define a new simulation and Clothify the right and left sleeves. You'll need to define the parameters of each sleeve individually, but they can both be within the same simulation. When Poser runs the cloth calculation, the dress will be complete.

K Make the dress conform to the model for seamless movement

L All dressed up and ready to go!



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+ Create a texture

01 Pick an image editor

For this you will need a 2D graphics application such as Photoshop, PaintShop Pro or GIMP. The latter is comprehensive, well supported and freely available from www.gimp.org. Start by opening the template created by UVMapper. I tend to work with a 4,096 x 4,096 template; if the final model doesn't require this level of detail, you can always reduce its size. Starting small and trying to enlarge never produces good results **A**.

02 Flood with colour

I have used the Paint Bucket tool to flood the background with colour; this makes the template easier to see **B**.

03 Use layers

I find it best to work on multiple layers as I continue to add detail. The folds and shadows are created using the Dodge and Burn tools. Always save early and often to avoid losing data **C**.

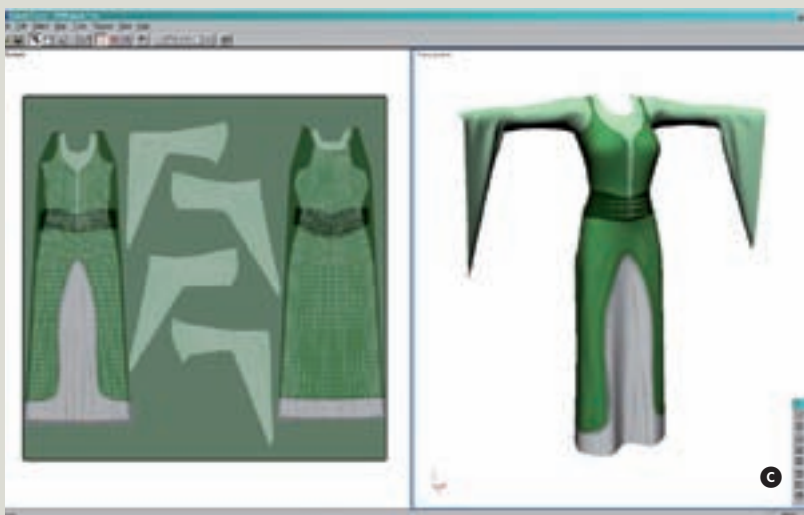
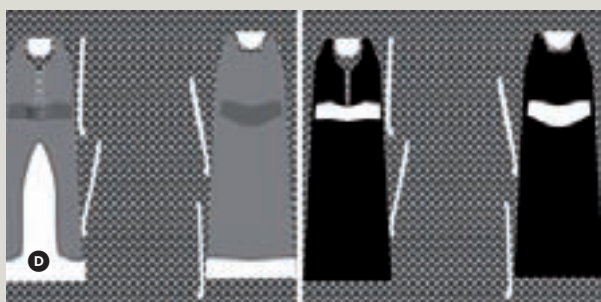
A Open image editor and dress template

B Apply colour to boost definition

C Build up layers to work in detail

D Align seams in the preview mode

E Apply final textures to the dress



04 Preview the texture

In your paint program you can copy your texture to the clipboard and instantly preview it in UVMapper's 3D view. This is particularly useful when trying to align seams. Transparency, Bump and Highlight maps may be built up in a similar way **D**.

05 Material Room

Once all the texture maps are completed to your satisfaction, they can be applied to

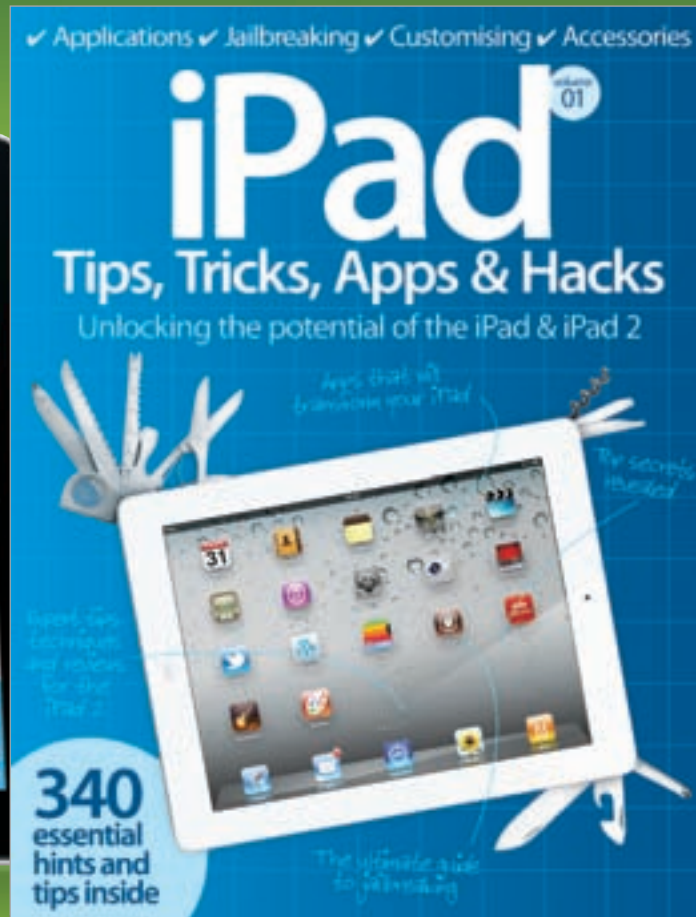
the dress in the Poser Material Room, as demonstrated in the screenshot. Then, by either varying the Hue/Saturation options within Photoshop (via Layer> Adjustments> Hue/Saturation) or by using a Color_Math node within Poser itself, you can very quickly generate outfits in a large assortment of colours. The blend in this particular material setup is just the original green texture which has been converted to Grayscale **E**.



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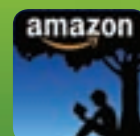


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A Poser figure imported into 3ds Max and rendered with Subsurface Scattering in mental ray

Poser Pro 2010 \$499

A version of Poser aimed at the professional animator

We reviewed Poser 8 here when it first came out, and Poser Pro 2010 is basically Poser 8 with extra bells and whistles aimed at the pro animator. The idea is to take the easy

workflow and high-quality figures, clothes and other content available for Poser, and give them a way into a professional studio workflow that might involve high-end hardware, multiple other 3D packages and networked render farms.

So what's Poser Pro got over the standard version? Well, for a start, it's 64-bit, so you can make use of your computer's power (and, crucially for Poser, its memory). However, the most important addition as far as most users are concerned is PoserFusion. PoserFusion is a set of plug-ins for 3ds Max, Maya and CINEMA 4D (with a LightWave version promised soon), which enable you to use your Poser characters inside your main 3D application.

Theoretically this is great, because it means you can integrate Poser fully into your 3D pipeline, and make use of the extended animation and rendering possibilities of your main package.

However, it's not quite as simple as it sounds. PoserFusion doesn't convert your

Poser figures, it 'hosts' them - effectively running a copy of Poser alongside your animation package. Your Poser figure appears in your 3D package's viewport along with converted materials and any animation you've done in Poser. However, sadly, you can't alter that animation within your package, and you can't re-pose the characters without going back to Poser.

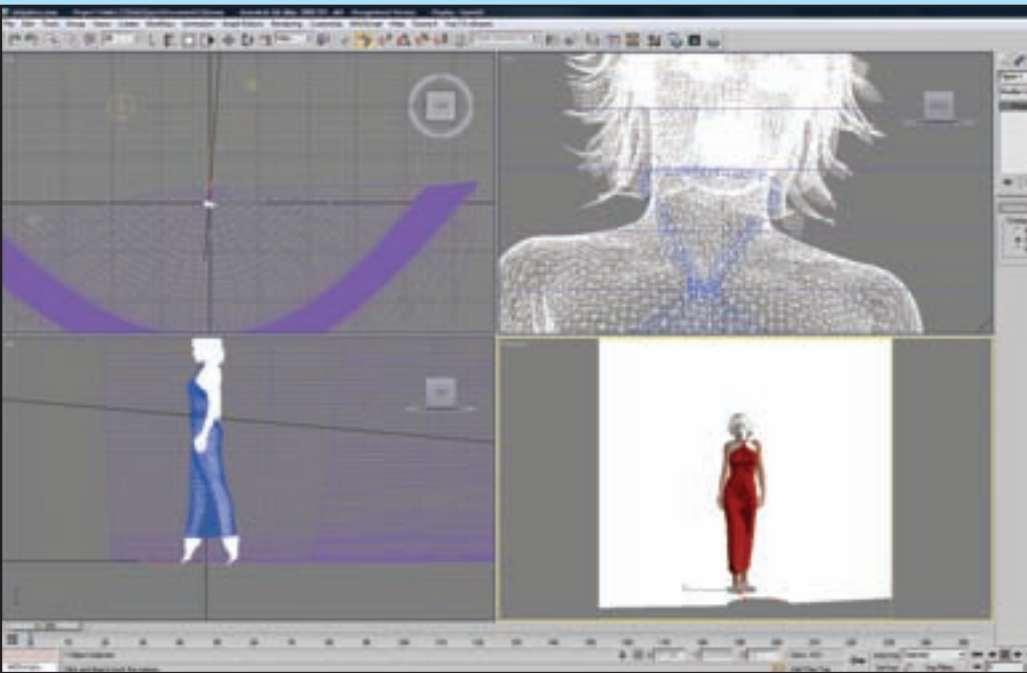
You're also effectively running two highly resource-hungry packages at the same time, so you need a high-spec machine and stability can be an issue.

You also have to bear in mind that if your character needs to handle any props or react to anything in your scene, you'll need to export those objects to Poser and back again. In other words, it's clunky and awkward -



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Poser figures appear in Max but you can't edit their animation



The additional content in Poser Pro feels like a bit of an afterthought

and there's rather a lot that can go wrong in the translation.

Poser Pro also provides network rendering. If you have more than one computer, you can queue up multiple Poser scenes for rendering across the network and leave the package to get on with it. If you've got a lot of rendering work on, this feature will probably justify Poser Pro on its own. Even if you've only got one computer, the ability to queue files means you don't have to be there to re-set the scene for every render (although there are other add-ons such as BatchGen that will do this for less than \$5).

In terms of content, Poser Pro provides all the figures, props and poses you'll find in the standard package. There are a few extras, but to be honest they're not fantastic. The Creature From The Black Lagoon makes an

appearance and there are a couple of low-resolution generic characters which might have some use for games or architecture, but they don't come close to the standard Poser figures.

All in all, Poser Pro definitely recognises what it takes to get Poser into a professional animation studio. However, it's a bit patchy on making it happen. If using your Poser characters in your 3D application is all that you need to do, Poser Pro makes it possible and the results are great – but it's not easy. Check out the FBX exporter for DAZ Studio as an alternative (although this too is a long way from being an ideal, all-round solution).

Network rendering is a big plus, and the 64-bit version of Poser will doubtlessly improve performance.



The good & the bad

- ✓ The 64-bit version makes full use of your computer
- ✓ Render your 3D animations in your own 3D package
- ✓ Network rendering
- ✗ PoserFusion 'hosts' rather than exports your figures
- ✗ Integration with other packages is clunky
- ✗ Animation tools could be better

Essential info

www.smithmicro.com

• \$499

£320 (approximately)

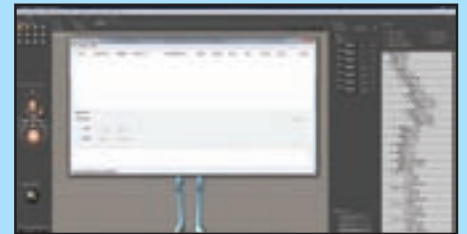
OPERATING SYSTEMS

- Windows XP, Vista or 7
- Mac OS X 10.4, 10.5 or 10.6

OPTIMAL SYSTEM REQUIREMENTS

- 1.3GHz Pentium 4
- 1GB RAM

The network rendering tools will be a great help to many animators



The Poser Pro interface looks pretty much the same as Poser 8



Our verdict

Features 7/10

Ease of use 7/10

Quality of results 9/10

Value for money 8/10

“ Knows what it should be doing, but it isn't quite there yet ”

Final Score **8**/10

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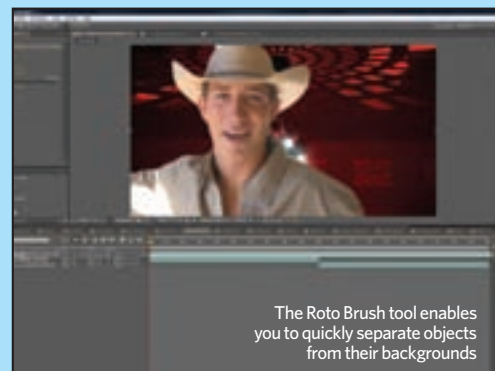
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After Effects CS5 £1,026

New rotoscoping tools headline After Effects CS5



After Effects is the ideal way to combine 2D and 3D elements into a single animation



Color Finesse is a subtle but powerful tool for colour correction

If you want to animate your 3D work, sooner or later, you're going to want to do more than just output it as a video

file. You may want to add postproduction effects, combine your animation with shot video or do colour correction, and that means you'll need a compositor. Just as Photoshop is the ubiquitous still-image-editing package, After Effects has always been the standard program for doing the same kind of work on moving images.

However, with Autodesk now providing its own compositing package with new versions of Maya and 3ds Max, After Effects is under renewed attack.

After Effects is a serious package that requires a serious investment in terms of time and effort to learn. However, once you have, it's incredibly flexible and gives you a high level of control over your 3D animations. The layout is a little cluttered in the same way that Photoshop's is and it contains many similar tools for selecting, adding filters to, and retouching elements of your shot. By definition, compositors work in 2D still images and video clips are 2D objects – but you can arrange those objects in 3D space within After Effects so, effectively, it's a 3D package too.

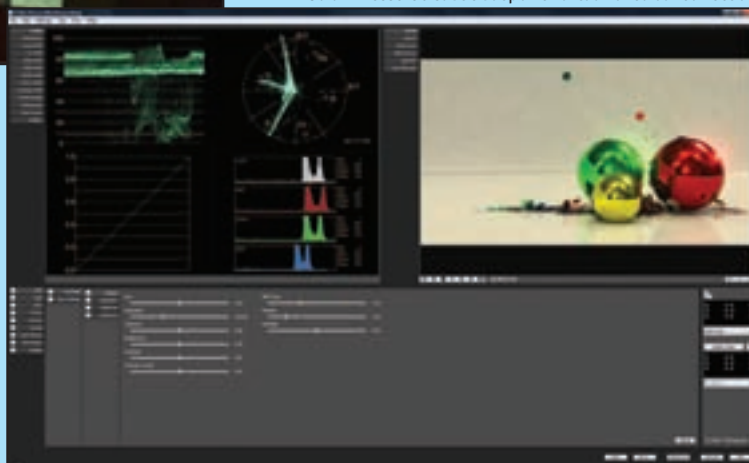
On the surface, version CS5 looks pretty much the same as the previous edition, except that the interface is a darker shade of grey. However, it's now 64-bit for the first time, so it can make use of the full power of your computer – which is important as more and more users are working with multiple layers of HD video. It also brings a range of new tools to the program.

The most significant of these has to be the Roto Brush tool. Rotoscoping is absolutely fundamental to visual effects work. It's the process of cutting out certain objects in a video shot so that you can reposition them, add effects, move them into another shot or place other elements between them and their backdrop. It often means drawing around objects frame by frame, which can take days.

The Roto Brush is basically Photoshop's Magic Wand tool set in motion. With it, you can draw a quick mask around an object and the package will extrapolate that mask for every frame of your video. It's by no means perfect and calculation is slow, but it works well on sharply defined objects and you can refine the mask later on with other tools.

A 3D mesh warp effect is also now included in After Effects' toolset, allowing you to distort a flat layer (ie text, stills or video) in 3D. There's Color Finesse too – a welcome plug-in for very advanced colour correction and adjustments.

All in all, After Effects is still likely to remain the most popular compositor on the market and it continues to add innovative new features in version CS5. It has a range of video and effects tools that you won't get with Autodesk's built-in compositor, but on the downside, it's not as fast to import and organise multiple render passes.



www.adobe.com

Our verdict

Features 9/10
Ease of use 8/10
Quality of results 9/10
Value for money 7/10

“ Still one of the best compositors around, After Effects has good integration with the rest of Adobe's video and animation apps ”

Final Score **8**/10

Not just for dummies



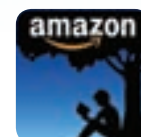
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Pixologic ZClassroom Free

3D artist Rob Redman takes a look at Pixologic's free ZBrush training provided in its online ZClassroom

I visited the site while working on this creepy-looking chap, to check out a tool. Very useful

Over the last few years ZBrush has exploded in popularity, and there are a multitude of learning resources available on DVD, in books and online – but where do you start? The obvious choice would be with the creators of ZBrush: Pixologic.

Whether you're new to ZBrush, use an older version or want to see what it's about, the ZClassroom is the best place to start.

It often seems that software companies provide 'training' on their sites which turns out to be more like promotional material with little value other than the 'wow factor' (and not always that). Pixologic breaks that trend.



Each section is divided by the simple film strip below the video player, making learning a straightforward experience



The introductory section has 13 videos teaching the basics of UI and workflow at an easy-to-follow pace



When you navigate to the ZClassroom site you are greeted by a banner, below which are various subjects. These range from basic introductions to fundamental features to tools added in newer versions. You will also find them divided into categories: Getting Started, Plugin Tutorials and Artists Tutorials.

Under each tab can be found a selection of topics. Choose one of these, and you will then be taken to a new page with a film strip-style set of videos, all with a focus on your chosen topic.

These videos are well structured, and although most are short – being maybe two to three minutes long – as a collection, they are concise and comprehensive and you can learn a lot from them.

The video player isn't huge but it can be set to Full Screen, and while the quality is not the best, it's far from unviewable.

I've been using ZBrush since version 1.2 so I'm reasonably familiar with the toolset, but I still like to look around various sites to see what other people are doing with it, as well as to refresh my skills. There are often times when I stumble upon a video about a tool I've not used before or for a long time, and it inspires me to go and use it.

Tutorials are broken down into logical sections, making following a subject easy and intuitive



“ If you are looking for information it's very easy to find exactly what you need ”

That is one of the most rewarding aspects of the ZClassroom, especially the Artists section. It's very interesting to see how somebody else works, and can indeed be the spark that sets you off on your own creative journey.

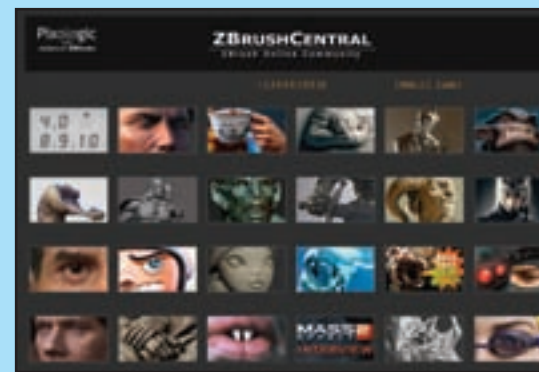
Back to the videos. One of the things I most like about the structure is that if you are looking for specific information it's very easy to find exactly what you need. For example, if you know how to use ZSpheres but one particular option has escaped your memory, you can easily hop over to the ZSphere section of the site and, in the film strip, choose the video focused on what you're looking for. This means you don't have to trawl through an hour-long video to find the specific tip or technique you're after. Personally, this makes the ZClassroom a much more valuable resource.

For users more familiar with ZBrush, or those looking to learn about the available additions, there is the Plugin Tutorials tab. At the moment this has the fewest tutorials, but they are nevertheless good videos. Currently there are only sections for Decimation Master and UV Master, but these are both useful and informative, and no doubt this area will grow with time.

In the Artists section can be found the ZClassroom webcast, with videos from a number of artists



Throughout the site are links to the forums, where you will find even more tips, resources and inspiration



What is perhaps the best feature is the price. All the videos, as well as some of the related plug-ins, alphas, meshes and support forums, are totally free, so if you haven't invested in ZBrush but are contemplating it, watch a few of these videos to get a feel for the workflow.

So all in all, ZClassroom offers a great deal of information, not to mention inspiration. While these are two things that most people would be willing to pay for, Pixologic impressively offers them for free, and presents them with style too.

www.pixologic.com/zclassroom

Our verdict

Features.....	9/10
Ease of use.....	10/10
Quality of results.....	9/10
Value for money.....	10/10

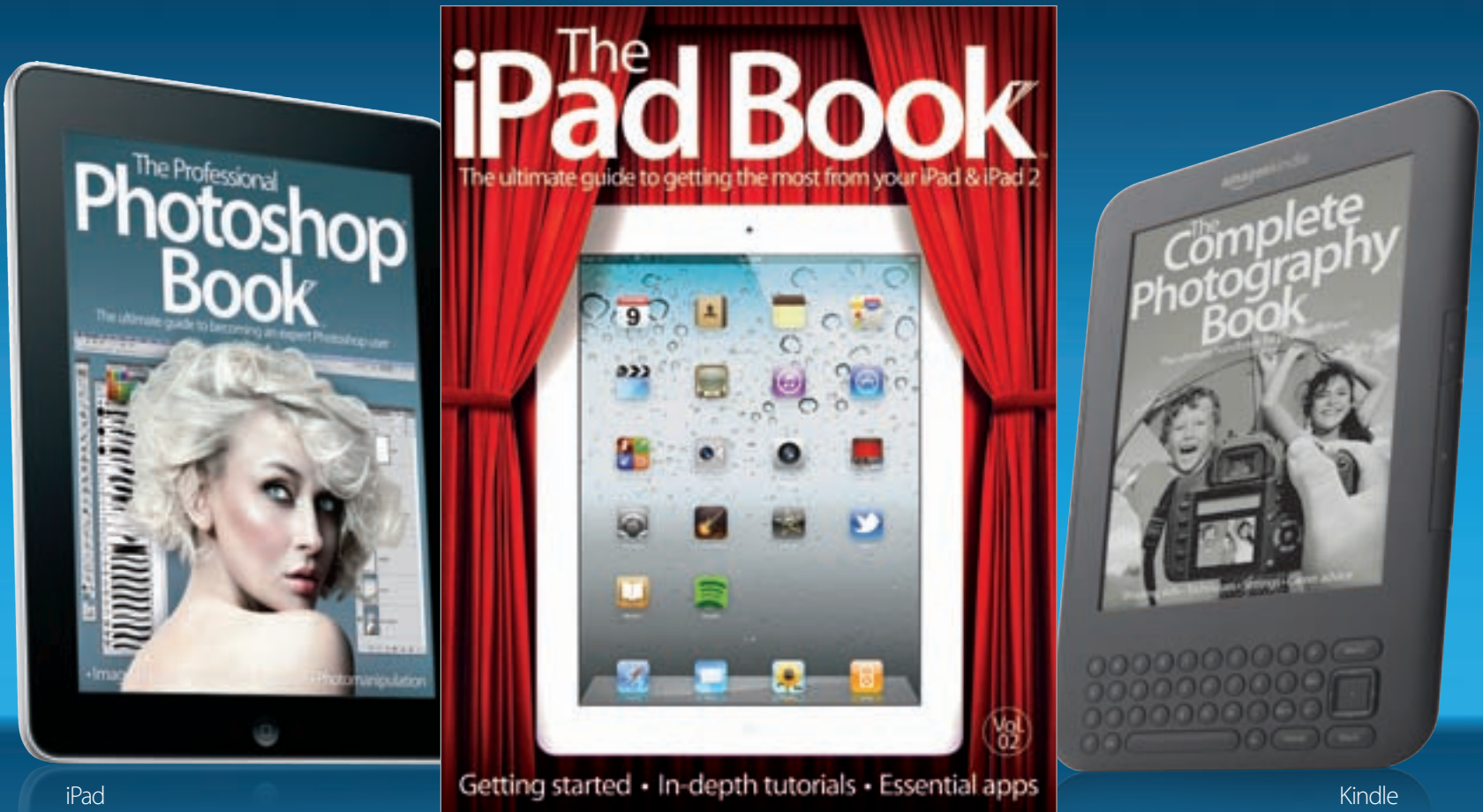
“ Lots of variety in a logical web interface and – best of all – it's free! ”

Final Score 9/10

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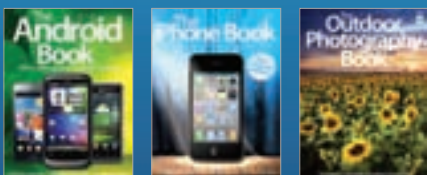
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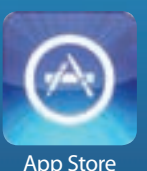
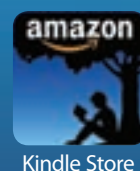
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Inside guide to industry news • expert opinion and education

The Goblin
Magdalena Dadela
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Industry news

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Magdalena Dadela

Discover how this artist went from studying at the Vancouver Film School to modelling characters for high-profile games and movies at Ubisoft

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Learn why this institution is ranked in the top ten colleges in the UK

inside

“I think the most important thing is compromise and not behaving like a diva”

Magdalena Dadela from Ubisoft talks about her career. Page 104

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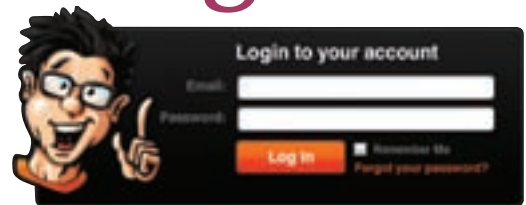
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Personalise your learning with the Vault

The Vault is Digital-Tutors' answer to customers' demand for the return of DVDs, without the piracy



④ The Vault offers the ability to move category tabs such as Browse and Playlist, as well as organise favourite courses and videos. You can now create an interface that meets your unique learning style

In August 2009 Digital-Tutors released an online training library. One year on – and as a response to customer feedback – the company has launched the Vault, a new library that allows artists to download training and work both on- and offline.

When Digital-Tutors moved from DVD to online training, not everyone was happy to lose the safety net of the disc. Not wanting to move backwards, the Vault became the answer: a desktop application that is fast and responsive, with all the same technology integrated that you find with the online training – the notes, tags and other unique features to Digital-Tutors training are all still usable offline. Add this to a new browsing system and a drag-and-drop type scenario, and users have everything any other desktop application would offer.

The Vault has never been done before. Digital-Tutors has tried to create a system that the user wants, looking to ramp up student appeal through features like playlist creation and customisable panels, making it an interactive environment that individuals can organise to suit their needs. What's more, there are no buffering issues with the Vault. Since the content is being downloaded, it will simply play off your hard drive.

Digital-Tutors training works through subscription plans; the Vault is synced up to users' subs online, or through their iPhone app. In the Vault, free credits are given as part of each membership. These credits are used to download the training needed by the user, which will last for seven days before expiring – this is just to avoid piracy issues and file sharing; users can quickly and easily renew the files with new credits. When viewing online you won't need to use your credits; these are just for those offline, on-the-go scenarios so that you never have to lose touch with your learning. Visit www.digitaltutors.com for further details.

“When Digital-Tutors moved from DVD to online training, not everyone was happy to lose the safety net of the disc”

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Hollywood effects

London and Los Angeles unite with the launch of CAUSE AN EFFECT



B The new VFX team are excited to show their clients a fresh approach to VFX

Decades and oceans have been bridged as long-term collaborators Nick Piper and Tim Rudgard join together to form the CAUSE AN EFFECT visual effects studio.

Piper is a creative director with years of experience and a great understanding of visual effects, having developed his skills as a digital artist through roles at MPC, Novocom and a52. Rudgard is the one relocating: from London's Golden Square Post he has moved to sunny climes as visual effects supervisor following a 13-year career in commercials and promo work. Credits to their names include SuperBowl ads, spots for Pepsi, Toyota and Apple, as well as music

videos for Michael Jackson and Kylie Minogue. Now, joining forces, they are working on a spot to launch the new Nissan Elgrand luxury vehicle in Japan with the new VFX team. "The CAUSE AN EFFECT team fits together incredibly well," Piper has commented. "We all like to work hard and we all like to have fun doing it."



Nuke usage grows worldwide

Nuke becomes compositor of choice for VFX schools in Singapore and beyond

With the world increasingly demanding stereoscopic content, VFX educational centres in Singapore and across Asia are responding by heavily investing in Nuke's powerful compositing tools. Wanting to arm students with the latest skills and knowledge to help

them realise their potential, Nuke is being adopted based on its proven quality in globally acclaimed movies such as *Avatar* and *Robin Hood*.

"We choose to teach Nuke because it's very powerful and it's a natural



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Industry FAQ

The industry's most frequently asked questions get answered by the experts



Expert Mark Cass
Technology director

Company Escape Studios
Company website
www.escapestudios.com

The Escape Studios technology team receive all kinds of technical questions from clients and studios that want to get the best out of their hardware and software for maximum performance. We find out some of the top questions and answers that come up. Share the knowledge, we say!

What's all the fuss about 10-bit colour/LED displays?

Mark Cass: 10-bit displays are great little bits of kit: they allow ten bits of colour per channel over the typical/standard eight you would get through most connectivity standards. This results in a much 'truer' colour display – such that there could be millions of degrees of the colour black as opposed to thousands. This will hopefully replace the need for grading and expensive 'systems' or turnkey solutions by enabling compositors to correct colour during earlier phases, saving money on projects that don't require 'finishing'.

At the moment, The Foundry's Nuke is the only software that natively supports 10-bit display, and DisplayPort is the only connector; however, as we move through time we're hoping to see this become the new standard for digital imaging.

One of the best aspects of moving from LCD to LED will be the intense level of contrast-ratio that's never been as sharp on a digital panel, further eliminating the need for broadcast quality CRT/tube based solutions. Part and parcel with the move to LED will be much lower power consumption – something we can all enjoy with the drive for green living!

Have a question for the Escape Studios experts? Email it to lynette.clee@imagine-publishing.co.uk

replacement for Shake," a spokesperson for Ngee Ann Polytechnic, Singapore has said. "However, the most important factor for us is that it has become the international standard industry compositing tool and that means more job opportunities for our students when they graduate."

The Korea Creative Content Agency and The City University of Hong Kong have also purchased Nuke for their specialist training facilities. For information, visit: www.thefoundry.co.uk.





Industry insider

Magdalena Dadela

Modeller and digital sculptor

Each issue, 3D Artist finds out how people in the 3D industry got their jobs and what you need to know to get a foot in the door yourself

About the insider

Job Modeller

Education Master's degree in English Literature and graduate of Vancouver Film School's 3D Animation and Visual Effects programme

Company website www.ubisoft.com

Personal website <http://mdadela.com>

Biography

I was born and raised in Poland where I studied English as well as Economics and Diplomacy before realising what I really wanted to do. After seeing *Finding Nemo*, I decided that 3D was the ticket. At first I thought I wanted to be an animator but, while at VFS, I quickly realised it wasn't quite as much fun as I'd hoped. Discovering that I enjoyed modelling, I decided to pursue that area instead

Ever since she was a child growing up in Poland, Magdalena Dadela was fascinated with realist and representational art. She was drawn to great masters who could paint or sculpt a human figure in fine detail and with mindblowing subtlety, like Bernini or Donatello. She did enjoy some surrealist work but couldn't associate with abstract art in any way. For Magda, the detail was paramount. Given that interest, it's no real surprise that after starting as an English graduate, she decided that the world of 3D would be a more attractive option. Magda took the plunge and went to the Vancouver Film School to study 3D and emerged with a diploma in 3D animation. From there it was a short step to getting a job with Ubisoft Digital Arts, based in Montreal, in the field of character modelling. Subsequently Magda has worked on top titles such as *Predators*, *Assassin's Creed* and *Far Cry 2*.

1 *The Fireplace*: This was a project done for a CGTalk Hardcore Modeling Challenge. It's based jointly on one of my favourite paintings - James Tissot's *The Fireplace* - and myself, since the aim of the challenge was to produce a classical self portrait

3D Artist: To be a character modeller, do you think it's important to be able to draw in 2D, either with traditional tools or using Photoshop/Painter?

Magdalena Dadela: I think it helps to be able to draw but I do know great 3D artists who don't. I've never learnt properly, though it's something I'm working on now in my spare time. I took some courses in Bargue drawing and I try to draw every day at least a little bit.

3DA: What kind of activities does your job involve on a day-to-day basis?

MD: Usually it involves modelling based on very rough concepts and often I also have to make a number of design decisions. I do mostly character work, but in the past I've also worked on sets and props. It all depends on the project. There's usually a lot of ZBrush involved in practically everything I do.

3DA: Do you work on your own or as part of a team usually? How does the process work?

MD: I work as part of a team. This is a team-oriented job and though each of us usually gets one character or one part of the set to focus on, in the end we have to work together and, if need be, another artist has to be able to introduce changes to what you did without having to redo everything.

3DA: What kind of personality or particular traits do you need to be a good team player in this kind of role and industry?

MD: I think that the most important thing is compromise and not behaving like a diva. Also embrace criticism because you'll get a lot of it at work.

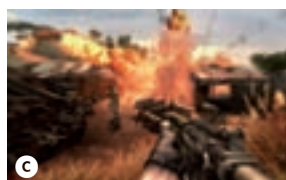
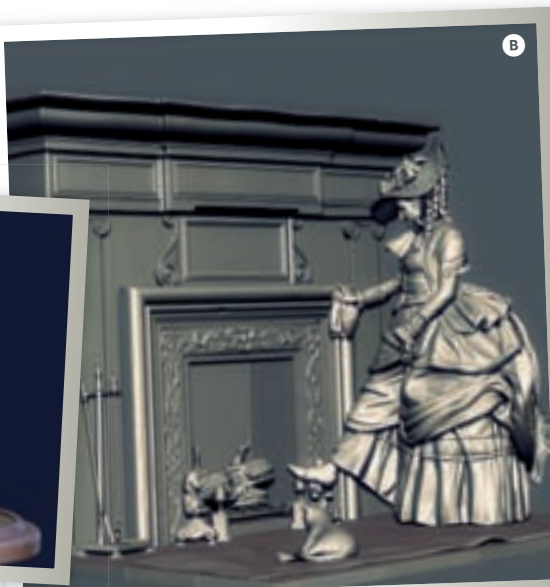
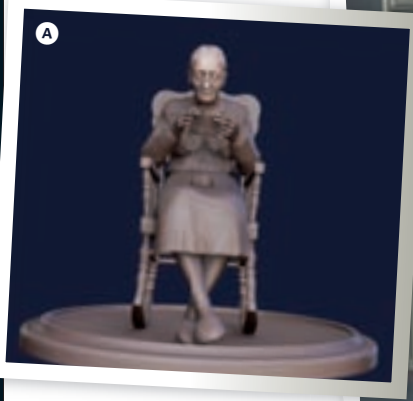
3DA: What kind of 3D skills do you need to be a character modeller?

MD: Well you need to know at least one major 3D package, because poly modelling is still the most important tool. A sculpting package is the second thing because it makes your work much faster and allows for much more freedom and versatility, however don't base your skills solely on this.

3DA: What software packages do you regularly use in your job?

MD: The package we use most regularly is Softimage's comprehensive 3D animation tool, XSI. We also frequently make use of programs such as ZBrush and Photoshop.

A *Old Woman Knitting*: This was done during a workshop at a CGTalk Anatomy Forum, which I had the pleasure to run. The theme of the workshop was 'Old Age'



C *Far Cry 2*: In-game shot of the popular first-person shooter set in the African wilderness

portfolio highlights

Here are the major projects that Magdalena has worked on so far

- 2010 *Predators*
- 2009 *Assassin's Creed: Lineage*
- 2008 *Far Cry 2*
- 2008 *EndWar* cinematic
- 2007 *Assassin's Creed*



D

E Elmer: It's my homage to the great Chuck Jones and the Warner Bros cartoons, which in my opinion remain unbeatable to this day



E

3DA: What's the most interesting project you've worked on professionally?

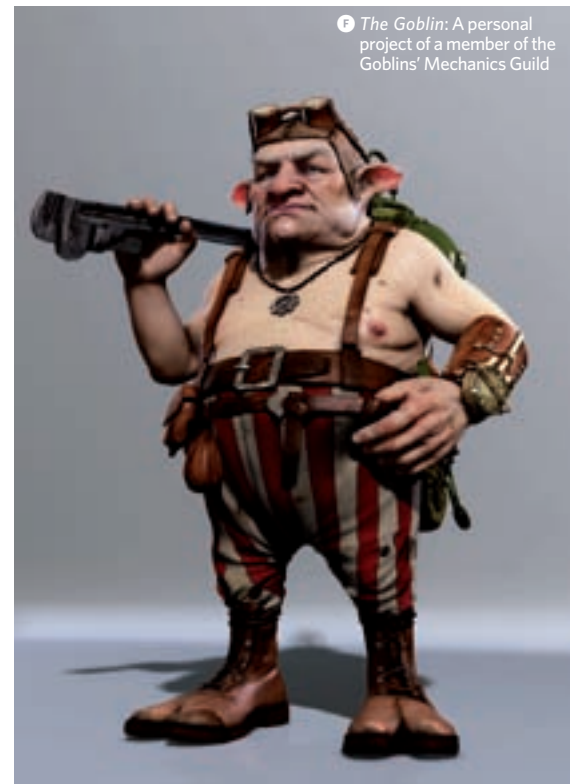
MD: All of them are interesting in their own way. The latest project – *Predators* – was challenging for me because I got to do some matte painting which was a completely new area. *Assassin's Creed: Lineage* was also different, because I was mostly responsible for non-organic assets such as buildings and interiors, which I've never done on such a large scale before.

3DA: Do you get time to be creative outside of your job? Do you have any personal projects that you are currently working on?

MD: Yes, I'm always working on some personal project or another – very often more than one.

3DA: What kind of training or education do you think a student should consider to get a job in the character modelling field?

MD: My top tip to aspiring character



F The Goblin: A personal project of a member of the Goblins' Mechanics Guild

modellers would be to work on anatomy, drawing skills and only then start to worry about 3D packages.

3DA: What's the toughest thing about working as a character modeller?

MD: Deadlines! Sometimes it's frustrating not to have enough time to make the model as well as you'd like. You may only have two days but must still make it good enough to meet the company's high standards.

3DA: If you could wish for one extra feature in your most-used software package, what would that be?

MD: Wow, that's a tough one! I'd say I wouldn't mind better profile curves in XSI – something like modo's Profiles – so you could make things like mouldings in two minutes instead of ten.

3DA: Finally, what would be your dream project?

MD: *Harry Potter* or *The Hobbit* would be dream projects. Well, actually, any big fantasy movie. It'd be great to see *The Bartimaeus Trilogy* filmed, or perhaps some of David Eddings' books. I've also been a huge *Doctor Who* fan ever since the early days so the opportunity to work on an episode of *Doctor Who* would make me ecstatic, to put it mildly.

“ I think that the most important thing is compromise and not behaving like a diva. Also embrace criticism because you'll get a lot of it ”



G

D Mefisto: This is another project done during a modelling challenge. The idea was to create 15 facial expressions. I was inspired by Tim Bruckner and Jacques Gautier

G Sarah Kerrigan: Clay render (produced with mental ray) of my version of this Blizzard character. I was inspired by Steve Wang's amazing sculpture and thought I'd sculpt my own interpretation

+ The best courses and freshest talent from around the globe...

West Nottinghamshire College

Ranked in the top ten per cent of colleges in the UK, West Nottinghamshire College teaches 3D design skills on its Multimedia and Interactive Media courses

One of the largest colleges in the UK, West Notts is helping students develop 3D skills and experiences through access to industry-standard facilities at both National Diploma and HND level. The courses aren't dedicated to 3D, but the LightWave units have proven to be the most popular within the creative arts at West Notts. Many students of the National Diploma also go on to study the HND Interactive Media course. "I genuinely think that the students who want to pursue design really get the 'bug' and don't want to let go of the skills," said LightWave trainer, Anthony Hall.

West Notts is prepared for students that come to them without any experience in 3D design, and they understand that, for most, it will all be brand new territory. On the National Diploma course students are introduced to how 3D artists work and what it's all about, from basic models to how it's being used in film and TV today. Students are given two 15-week projects to get their modelling skills up to scratch using



LightWave. As one of only two LightWave training providers in the UK, West Notts adopted the software about four years ago, which has since been greatly developed into the version used now. "There are many more features and functionalities now," Anthony explained. "We started teaching just one class of 18 students on the BTEC National Diploma in Multimedia. They learnt LightWave 3D techniques through one unit per week which helped them learn the skills for 3D modelling."

The HND course contains three units, which incorporate 3D elements – all taught by Anthony. He approaches classes in a workshop style with demonstrations of various 3D modelling techniques followed by set tasks. Both courses focus on modelling, but also cover 2D, 3D and 4D technology and animation techniques, all using LightWave. The idea is to give students an essential foundation upon which to further build their skills. Anthony revealed:



"Last year, out of ten students on the HND, half of them went on to study the last year of a 3D/animation or games design degree at university."

West Notts is in the early stages of creating a course that will focus entirely on 3D creation. Stay atop of news and find out more about the college at www.wnc.ac.uk.



Course details

Name HND Interactive Media

Length Two years

Fees Part-time: £680. Full-time: £1,310 (fees for the academic year 2010/11)

Entry requirements Ideally, you will have a BTEC National Diploma in a relevant subject, or two A-Level passes (one should be design-related)

Name BTEC National Diploma in Multimedia

Length Two years

Fees Free for under 19s and £150 for over 19s

Entry requirements Four GCSEs at grade C or above including English, or a BTEC First Diploma in Art and Design

ADDITIONAL INFO: The student finance office can offer advice and guidance in terms of any grants or fee reductions that students may be entitled to – call 01623 627191 for further information

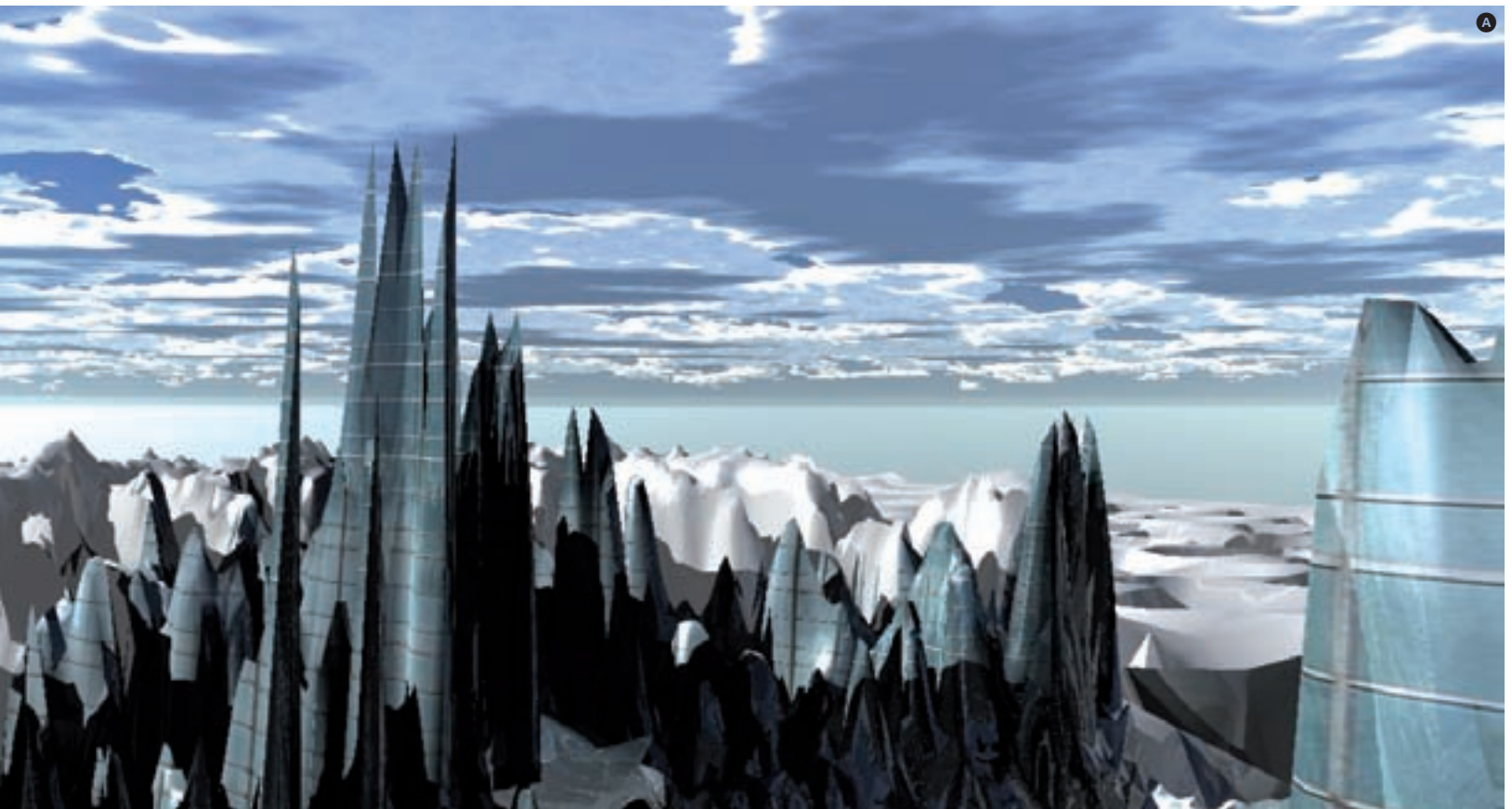
“Classes are taught on top-of-the-range iMac computers, using the latest software. The atmosphere here is amazing”

Anthony Hall, LightWave trainer

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A



B



C



A Gemma Gill
Course: HND Interactive Media
Software used: LightWave, Photoshop
 "One of the units we had to cover was to create a futuristic world incorporating environmental issues"

B Anthony McMenemy
Course: HND Interactive Media
Software used: LightWave, Photoshop
 Anthony has finished the HND course and is now looking for employment in the 3D industry

C Hayley Baker
Course: BTEC National Diploma in Multimedia
Software used: LightWave, Photoshop
 "Working with LightWave 3D has improved my work no end"

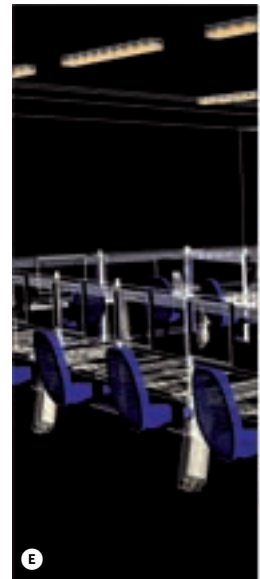


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Inside guide to industry news, studios, expert opinion & education



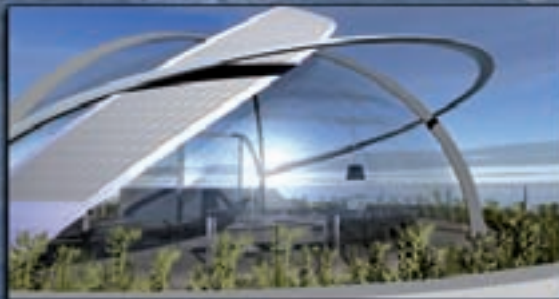
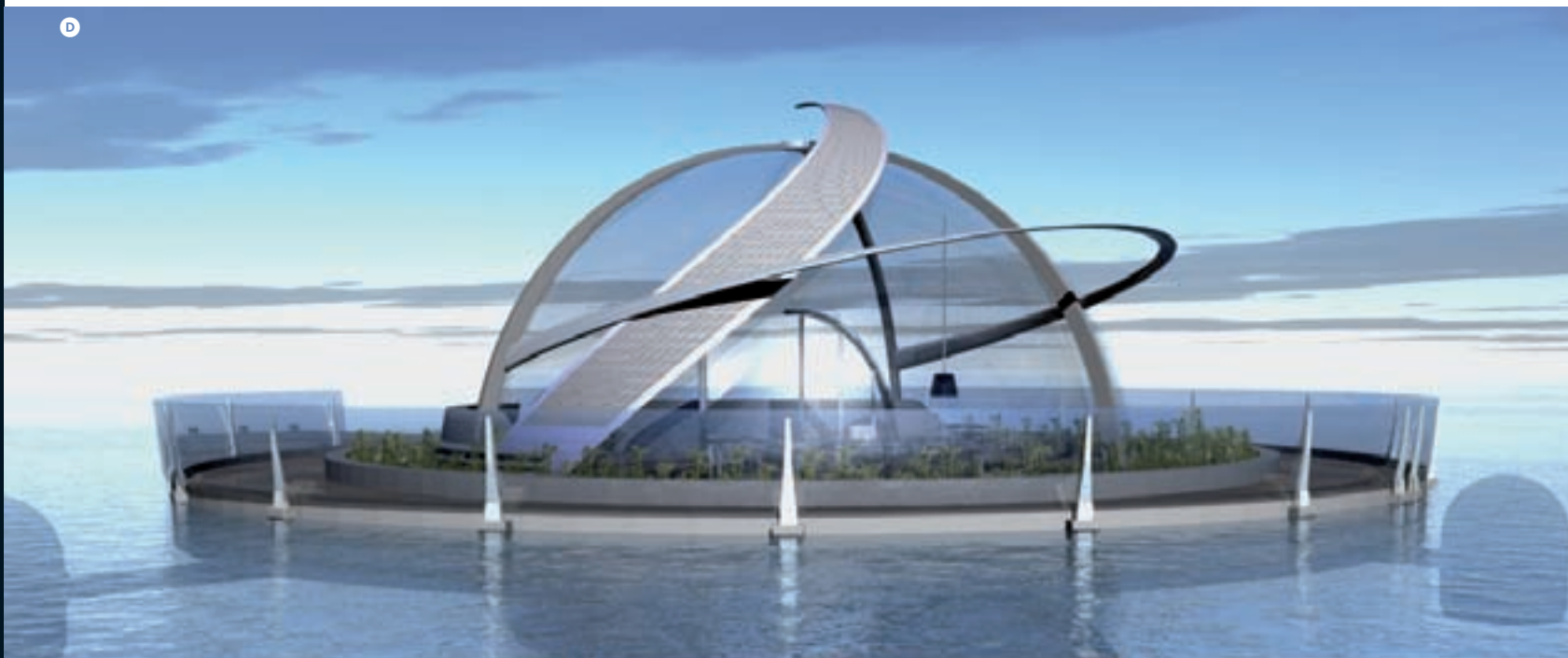
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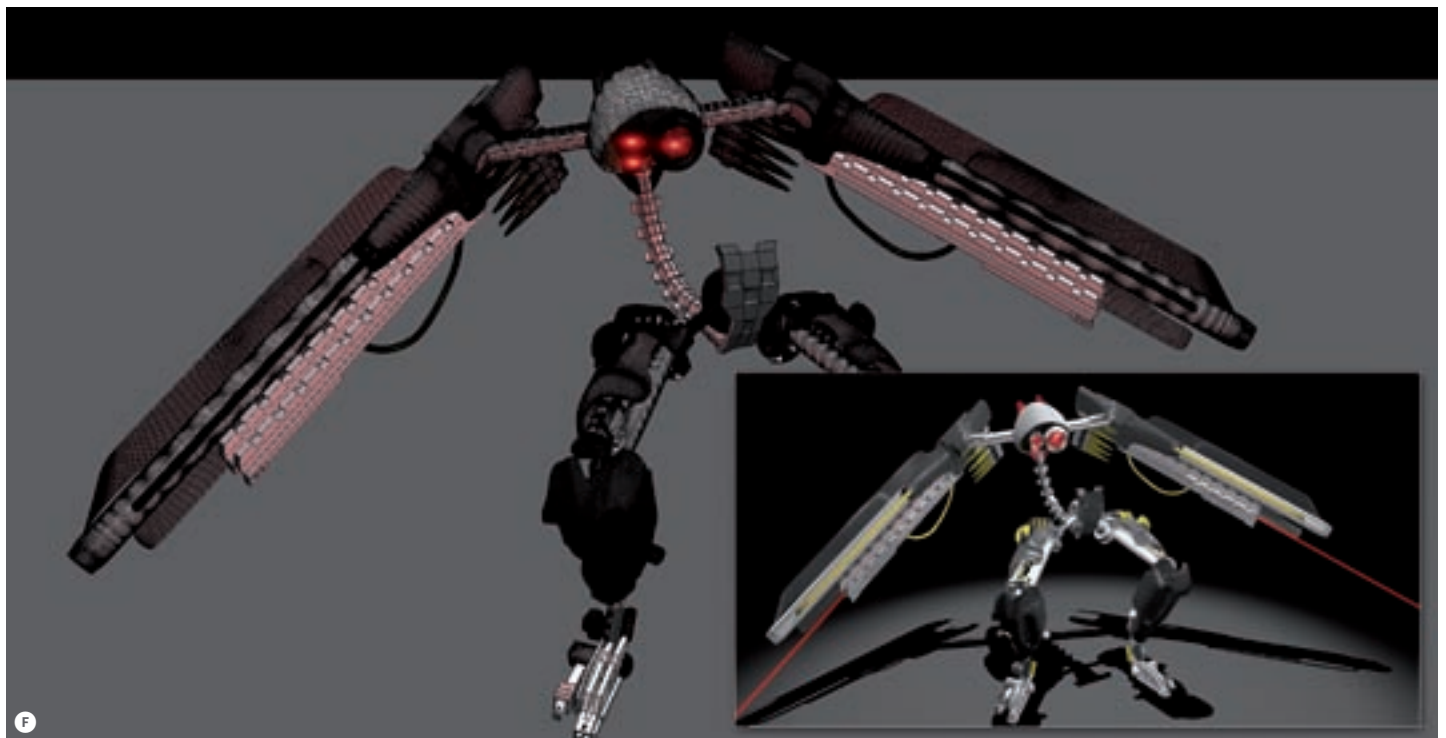


“The outcomes that I look for in the students are pure inspiration and engrossment in the subject – to enjoy what they’re doing and to get excited about this software, just as I do with lots of different students on lots of different courses”

Anthony Hall, LightWave trainer

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D Liam Goward
Course: BTEC National Diploma in Multimedia
Software used: LightWave, Photoshop
 "LightWave helped me realise my designs for this project in a way I never thought possible"

E Danny Cooper
Course: BTEC National Diploma in Multimedia
Software used: LightWave, Photoshop
 "After learning LightWave 3D I used the program to re-create the multimedia centre where we learn"

F James Marshal
Course: BTEC National Diploma in Multimedia
Software used: LightWave, Photoshop
 This robot was created as part of James's final major project

G Lauren Meldrum
Course: BTEC National Diploma in Multimedia
Software used: LightWave, Photoshop
 "I've really enjoyed working with LightWave 3D. It truly is an amazing software program"

